American Aviation

SERVING THE INDUSTRY SINCE 1937

W. T. Piper Discusses Military, Civil Markets
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SERIAL RECORD

Shortages beset production 11

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35 cents

39 out of the 46 Boeing Stratocruisers now in service or on order for U. S. airlines depend on Hamilton Standard *Hydromatic* propellers. In fact, *Hydromatics* now are specified for 98% of all U. S. transports.

HAMILTON STANDARD

Wherever Man Flies

American Aviation NEWSLETTER

Volume 15 Number 20 October 15, 1951

Airframe manufacturers have started getting the word to cut back on production schedules until output of engines and electronic equipment catches up. This "realistic" scheduling policy is designed to eliminate present hit-and-miss system in which airframes often sit on runways waiting for engines or equipment.

New policy will create plenty of headaches. Many plane builders will have to switch assembly line workers to different jobs because of reduced production schedules. Few lay-offs are expected, however, because skilled labor is getting more critical daily.

Materials allocations to airframe producers will be reduced in line with the new policy. Recent NPA ruling that all unfilled orders for steel, copper and aluminum not filled by Oct. 7 be considered part of the fourth quarter allotments rather than third quarter, in effect, means that metal cuts have already been made. Most airframe builders lost out as a result of the ruling.

Re-expansion will be many months in coming. Engine output, the most serious lag, depends on production of specialized machine tools. And it was only very recently that tool builders started their expansion program in earnest.

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Cuts have also been made in civil production—commercial transports and plane parts—for the first quarter of 1952. Defense Production Administration's Program Adjustment Committee made the cut in the proposed allotment of controlled materials to NPA's Aircraft Division. The NPA division, which had made its request pretty much on the basis of 1951 fourth quarter allocations, has appealed the ruling but it probably will stand.

Reduction in civil plane production, it is pointed out, will be no worse, and in many cases somewhat better, than the drop planned for output of military planes.

•

UAW-CIO is out to bring aviation pay scales up to the level of those paid in the automobile industry. Union vice president John W. Livingston says a 10-12 cent differential still exists between the two industries.

Other demands made public at the UAW's national aircraft meeting in New York include cost of living pay hikes, an annual improvement factory based on increased productivity, and company-financed welfare benefits.

First step in obtaining higher pay scales was a request to Labor Secretary Tobin that he raise minimum wages paid by aircraft plants working on Government contracts from $1.05 to $1.35 under the Walsh-Healy Public Contracts Act.

Union delegates also want the Wage Stabilization Board to create a separate panel for the aviation industry. The UAW would like to see this panel consider aircraft wages on a national scale, thus permitting standardized pay scales.

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Senate-approved $5,000,000,000 emergency build-up fund for air power has been reduced to $1,000,000,000 by Senate-House conferees. Under the compromise, USAF will receive two-thirds of the billion and the Navy the rest.

Cut probably won't interfere with the USAF's plans to start building toward its new goal of 138 wings. Remainder of the money will probably be voted in a supplementary appropriation after January. Reduction was made, according to Sen. Joseph C. O'Mahoney, because the Defense Department failed to give detailed plans on how air power would be expanded with the money.

Besides the billion, conferees agreed on $11,215,800,000 for the USAF for procurement and related equipment, $4,000,000,000 for the Navy for the same purpose and $44,000,000 for the Army for planes.

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Aircraft personnel managers are trying to solve the rapid turnover problem. One firm, for example, hired 1,200 new workers in December, 1950. Three months later 38% were no longer with the company. And three months after that an additional 17% had been removed from the payroll.

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Shortage of structural steel will probably cause an extension of the 60-day moratorium on rapid tax write-off certificates, which is scheduled to end Oct. 18. Certificates requested by military plane and parts builders will still be acted on, however.

•

Shortage of mediators in the National Mediation Board is creating a backlog of disputes involving airline, railroad and bus companies. Funds authorized for NMB are not enough to permit adequate hirings.

MANUFACTURERS

A $30,000,000 plant to build Wright R-3350-26W and R-3350-30W engines will be constructed at Flint, Mich., by General Motors Corp. It will have 1,000,000 square feet.

Jet-powered helicopters will be studied by a new Hiller Helicopters division. Hiller is setting aside three acres at Palo Alto for facilities.

Lambert-St. Louis Field has been sold to McDonnell Aircraft Corp. for $9,873,000. Company has made a down payment of $1,000,000 and will pay the rest in 10 years. St. Louis will use the money for airport improvements.

Curtiss-Wright's chairman of the board, Paul V. Shields, has resigned but will remain until Dec. 31. C-W's president, Roy T. Hurley, will take over the job then, also remaining as president. Shields made a resignation agreement with C-W when he took over in April, 1949.

Melpar, Inc., electronics manufacturer of Alexandria, Va. and Cambridge, Mass., has been bought out by Westinghouse Air Brake Co.

Stockholders will vote Oct. 30 whether to merge Muskegon Piston Ring Co. with Thompson Products, Inc. Muskegon stockholders will receive one share of Thompson stock for every 2½ shares they hold.

Air Materiel Command has warned 4,800 manufacturers that it will not tolerate gifts to its procurement officials, telling the contractors they face heavy fines if they try to obtain contracts by bribes or gratuities.

Interviewing hours at AMC headquarters in Dayton are now 1-5 p.m. daily for contractors representatives. Morning hours will be used by AMC buyers for routine tasks.

To meet commercial competition, Lockheed has revamped its sales organization. H. M. Ellis, formerly sales manager for Hamilton Standard, will head a direct selling group. J. E. Boyce and W. S. McGilvray, Jr., become export and domestic sales coordinators, respectively. J. A. Thomson becomes assistant to general sales manager-administration. Sales engineering office headed by Robert R. Reedy becomes a project system with C. E. Sowle heading technical data and operational analysis; L. R. Hackney heading air cargo; R. F. Stoessel in charge of Constellations; R. A. Pitkin in charge of fighters and C. E. Burns responsible for P2V and ASW's.

Production interchange of more U. S. and British plane types is expected by W. T. Gill, president of the Society of British Aircraft Constructors.

Lockheed president Robert E. Gross thinks the U. S. can overtake Britain's lead in jet transports. He says present British designs don't have enough range for over-water flights or operating costs low enough for profitable land routes.

Navy has given Skyline Corp., Wichita, a $1,000,000 contract to build plane equipment and the firm expects another soon.

Renegotiation Board members, just approved by the Senate, are John T. Koehler, John H. Joss, Lawrence E. Hartwig and Frank L. Roberts. Koehler has been named chairman.

Flight and installation center will be built at Palmdale, Calif., airport by Northrop Aircraft, Inc., and will be in operation after mid-1952. F-89's produced at Hawthorne will be flight tested and will have final equipment installed at Palmdale.

U. S. Claims Court has awarded Bell Aircraft Corp. $2,286,819 in its suit against the U. S. for four P-39 contracts dating back to World War II.

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PLANES AND EQUIPMENT

Martin 4-O-4 has been certificated by CAB and first one was to be delivered to Eastern Air Lines last week. Authorized gross weight is 43,650 pounds and empty weight 29,126 pounds. Cruising speed at 18,000 feet and 1,200 brake horsepower per engine is 280 miles an hour.

First test flight has been completed on the Convair 340. The plane stayed aloft two hours.

A new agricultural plane with a capacity of 100 gallons of liquid chemicals and improved dispersal equipment for control of the rate of application is now under development by Piper Aircraft Corp.'s Agricultural Development Division.

Britain's new twin-jet all-weather fighter, the de Havilland 110, has made its first flight. It is described as a great advance over the de Havilland Vampire and the Gloster Meteor II.

Largest single piece of aircraft wing ever made, a 323-pound, $7,000 aluminum strip, has been completed by Lockheed on its new $400,000 Giddings and Lewis skin mill. Each panel is claimed to eliminate 5,000 rivets and 300 man-hours of riveting labor.

Fuel additive promising to minimize lead fouling of aircraft spark plugs and permitting greater use of tetraethyl lead has been developed by Shell Oil Co. and is under test by the Navy. Known as T. C. P. (for tricresyl phosphate), it can achieve as much as 1,100% improvement in the lead fouling tendency of plugs.

Enough airborne and ground distance measuring equipment has been delivered by Federal Telecommunications Laboratories so that the New York-Chicago airway can be flown under DME guidance. Ground units have been placed in CAA towers at Caldwell, N. J., Allentown, Selinsgrove and Phillipsburg, Pa., Cleveland and Toledo, Millersburg, Ind., and Chicago.

CAB plans to require four separate types of emergency passenger exits. Generally the provisions of the new Civil Air Regulation will be more stringent than those now in effect. Comments on the amendment will be accepted until Oct. 26.

First three Navy versions of the Douglas DC-6A Liftmaster, the R6D-1's, have been delivered. One went to Navy's MATS squadron VR-3, another to VR-5 of the Fleet Logistics Air Wings unit, and the third remained at Santa Monica for Navy and CAA tests.

New line of starters for turbines, now in limited production by Hamilton-Standard Division, substantially cuts the time required to start a jet engine. The 45,000 rpm starter delivers 100 hp, permitting a start in 20 seconds.

(*Continued opposite Page 72*)

Tires, Tubes, Wheels and Brakes, Fuel Tanks and Floor Panels

All made by Goodyear for the New Sikorsky H-19 Helicopter

Goodyear contributions to this outstanding new ship include fuel tanks and floor panels as well as tires, tubes, wheels and brakes. This new H-19 10-place helicopter, soon to be available commercially, has already proved itself on the Korean front, where it went into service late in March during the Munsan perimeter action.

The H-19 is only one of many outstanding commercial and military aircraft on which Goodyear has furnished major components as well as landing gear. Goodyear, Aviation Products Division, Akron 16, Ohio or Los Angeles 54, California.

MORE AIRCRAFT LAND ON GOODYEAR TIRES, TUBES, WHEELS AND BRAKES THAN ON ANY OTHER KIND

GOODYEAR AVIATION PRODUCTS

SIXTH PRODUCTION LINE SIKORSKY HELICOPTER

The new H-19 is shown here in use as a flying ambulance during the action at the Munsan perimeter north of Seoul, Korea (Photo U.S. Air Force—Wide World)

American Aviation

SERVING THE INDUSTRY SINCE 1937

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other publications

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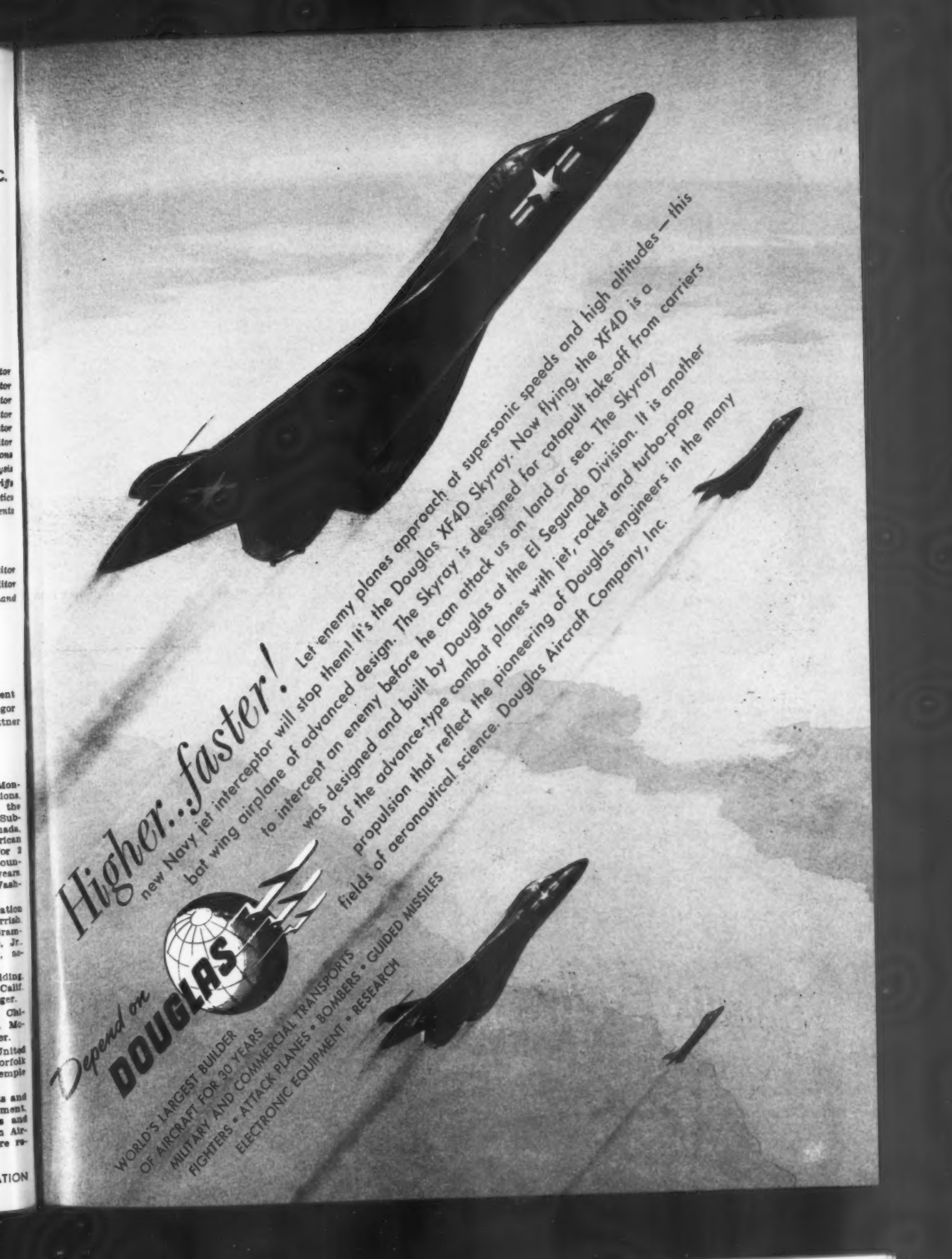
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When & Where

Oct. 15-19—Air Line Pilots Assn. International, Executive Board Meeting, Chicago.

Oct. 15-18—Society of Non-Destructive Testing, Symposium on Jet Engine Part Inspection, Hotel Detroiter, Detroit.

Oct. 16-17—Fourth Annual New York State Conf. on Airport Development and Operation, Onondaga Hotel, Syracuse, N. Y.

Oct. 18-20—Sixth Annual Arizona Aviation Conference, Phoenix.

Oct. 22-24—National Electronics Conference & Exhibition, Edgewater Beach Hotel, Chicago.

Oct. 24-27—NASAO Annual Meeting, Arizona Inn, Tucson.

Oct. 29-31—Society of Automotive Engineers, Fuels & Lubricants Meeting, Drake Hotel, Chicago.

Oct. 31-Nov. 1—Society of Automotive Engineers, Transportation Meeting, Knickerbocker Hotel, Chicago.

Nov. 7—Wings Club Annual Dinner, Waldorf-Astoria Hotel, New York.

Nov. 13-16—National Aviation Trades Assn., 12th Annual Convention, Hotel Texas, Fort Worth.

Nov. 28-30—Aviation Distributors & Manufacturers Assn. Annual Winter Meeting, Waldorf-Astoria Hotel, New York.

Dec. 4-5—Transport Aircraft Hydraulic Accessory & System Conference, Sheraton Hotel, Detroit.

International

Oct. 29-30—Air Industries and Transport Assn. of Canada, Annual General Meeting, Seigniory Club, Montebello, Quebec.

Oct. 30—ICAO, SAM/SAT Regional Meeting, Buenos Aires.

Nov. 20—IATA Traffic Conferences 1 and 2, Nice, France.

Nov. 21—ICAO, FAL, 3rd session, Buenos Aires.

Dec. 17—15th Wright Brothers Lecture, U. S. Chamber of Commerce Auditorium, Washington, D. C.

Dec. 17.—Wright Memorial Dinner, Statler Hotel, Washington, D. C.

Dec. 17—Air Transport Association, Board Meeting, Carlton Hotel, Washington, D. C.

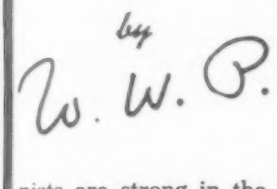
Dec. 18.—Air Transport Association, Annual Membership Meeting, Carlton Hotel, Washington, D. C.

Editorial

Sabotage

THE USAF idea of utilizing European aircraft facilities for the building of spare parts for USAF planes based in Europe has considerable merit, but the U.S. is faced today with a serious problem not encountered in any real measure either in World War I or World War II.

This is the problem of Communist sabotage. The Communists are well entrenched in much of France's aircraft industry and have seen to it that French aviation gets nowhere. In England the greatest single worry and threat at USAF bases is sabotage. The Communists are strong in the industrial areas of northern Italy. Only in Belgium, Netherlands and Scandinavia is the Communist power very weak.



Now that the USAF has decided to move its headquarters from West Germany to Paris, it will have to be doubly smart in handling its local relationships. It is one thing to be based as an occupying power, quite another to be based in a country where one out of every four persons is voting for an enemy power.

Generally speaking, the average American is a very trusting individual. He is not accustomed to the intrigue and undercover maneuvering that goes on in much of Europe. As conquerors and as an occupying military force, Americans have been well accepted. This new role of preparing for the defense of Western Europe is without precedent. The American is not as widely accepted as he has been in the past. The dissension of the one-in-four is apt to be forgotten in the cheers from the three-in-four.

For the first time in American history our military forces must be prepared on a large scale against sabotage. Thus it becomes a real problem to utilize and weld together the aircraft facilities of Western Europe, and to build vast bases and to establish operating headquarters. USAF will have to do a better job of educating and indoctrinating its overseas-bound men than it has done in the past.

A German Airline

YOU can't move very far in European airline circles these days without becoming aware of the concern over the re-establishment of a German airline. Before the war, Lufthansa was a big and powerful organization with routes over Europe and into Africa and to South America. After the war, the Scandinavians, Dutch, Belgians, French and British rebuilt their airlines and expanded in all directions. The Americans invaded European air routes but the absence of the Germans, and for a while the Italians, left plenty of traffic available to all.

Now the German problem arises again. European operators do not overlook the inherent features of German technical efficiency. They know a rebirth of German aviation is inevitable. It is only a question of timing and of imposing as many restrictions as possible.

There is no specific plan as yet. Several European operators, and one American carrier, have volunteered to provide aircraft and technical direction, undoubtedly with the idea that collaboration might be more profitable in the end than outright competition.

It is likely that the Germans will want to devote their initial attention to overseas routes which would be a stimulant to a revival of German foreign trade. Assuming that war does not intervene, a German airline is definitely in the offing.

A Standard for Europe

FOR the past few years a determined battle has been going on between the British and the U.S. over their respective air navigation systems. The battleground has been Europe. For obvious reasons, both commercial and military, the U.S. wants VOR (omni-range) adopted as the standard navigation system for Europe. The British have been fighting just as hard to obtain acceptance for their Decca system which is used in marine work and which it believes is superior to VOR for air navigation.

But VOR is winning out everywhere except in Britain, although admittedly the U.S. will be paying most of the bill for the installations. The U.S. desire for acceptance of VOR in Europe stems not alone from the advantages of standardization with the U.S. itself, but from the many advantages and superiorities of VOR over the low-frequency Decca system. Virtually all airlines in Europe have now indicated their preference for VOR. Only England itself remains a holdout. Even Ireland has requested two VOR installations.

Full credit for demonstrating VOR and winning acceptance throughout Europe must go to the CAA and especially to the CAA coordinator in London, Rolland Sturtevant. The CAA has had N-17, a DC-3 equipped with all sorts of experimental and demonstration equipment, available for use throughout Europe. It is one governmental activity that has paid off handsomely. John Humpstone of the ECA office in Paris has also contributed to VOR by his efforts to unsnarl currency problems.

VOR is not yet an accepted fact throughout Europe although it is on the way to becoming so. This in spite of the British victory at ICAO last May when they succeeded in ramming through ICAO an evaluation study of VOR vs. Decca. There are already sufficient evaluations completed to make the ICAO study unnecessary. VOR is the only system capable of handling large volumes of traffic and is not so susceptible of being rendered impotent by Russia since VOR is on very high frequency.

What is now lacking in Europe is a little more realistic push by the USAF. The USAF is preparing its airplanes for VOR use, but many more stations are needed before there is an adequate network. The CAA has done its part. ECA on top level still must act to make possible VOR purchases by some countries. And USAF can fill in the gaps. Then Europe will be up-to-date.

WAYNE W. PARRISH

Letters

Letters should be addressed to The Editor, American Aviation Magazine, 1025 Vermont Ave., N.W., Washington 5, D. C. Anonymous letters will not be printed, but names will be withheld upon request.

Same Old Story

To the Editor:

The impulse to write upon this topic was given to me by a very recent experience traveling on a transcontinental airtrip which covered 6,000 miles over three lines and included stops at ten airports. However, the incidents cited have occurred frequently in the past as well.

It borders on the ridiculous when, after a 6½-hour trip from San Francisco to Chicago, the passenger is forced to wait 30 minutes for his luggage at Midway Airport. After a 2¼-hour flight from Chicago to Washington, D. C., a 30-minute wait for luggage is also an absurd situation to accept. Finally, after a 30-minute flight from Richmond, Va., to Washington, D. C., the crowning blow was received in a 45-minute wait for delivery of baggage. "Something really ought to be done . . . !"

RICHARD P. DRAINE,
Lt. Cmdr., USNR
697 N. Emerson Street
Arlington, Virginia

Captions Switched

To the Editor:

Sincerely appreciate your splendid article on Bendix Ignition Analyzer on Page 39 of your Oct. 1 issue. Pictures are captioned incorrectly. Left hand picture is switch panel and right hand picture is relay and resistor box. These comments are for your academic information only; we do not feel that understandable error has affected what we believe is a very concise and complete story.

ROBERT BOYER
Scintilla Magneto Division
Bendix Aviation Corp.

'Net' Losses?

To the Editor:

"What Do Rail Passenger Losses Mean?" Some other conclusions are possible than those of authors Gotch and Crawford in their article bearing this title in the September 17th issue.

The authors present the financial data that show the railroads cannot produce passenger service on a profitable basis and hence must increase rates for users of freight service to cover passenger losses. The figures show a deficit for "passenger and allied services" of one-half billion dollars for all of the large (Class 1) railroads of the country. That, however, is a net figure, the result of combining a number of services of a number of railroads, some of each profitable, others unprofitable. The result does not mean what it seems to be saying. To draw conclusions therefrom which are necessarily favorable to

(Continued on Page 69)

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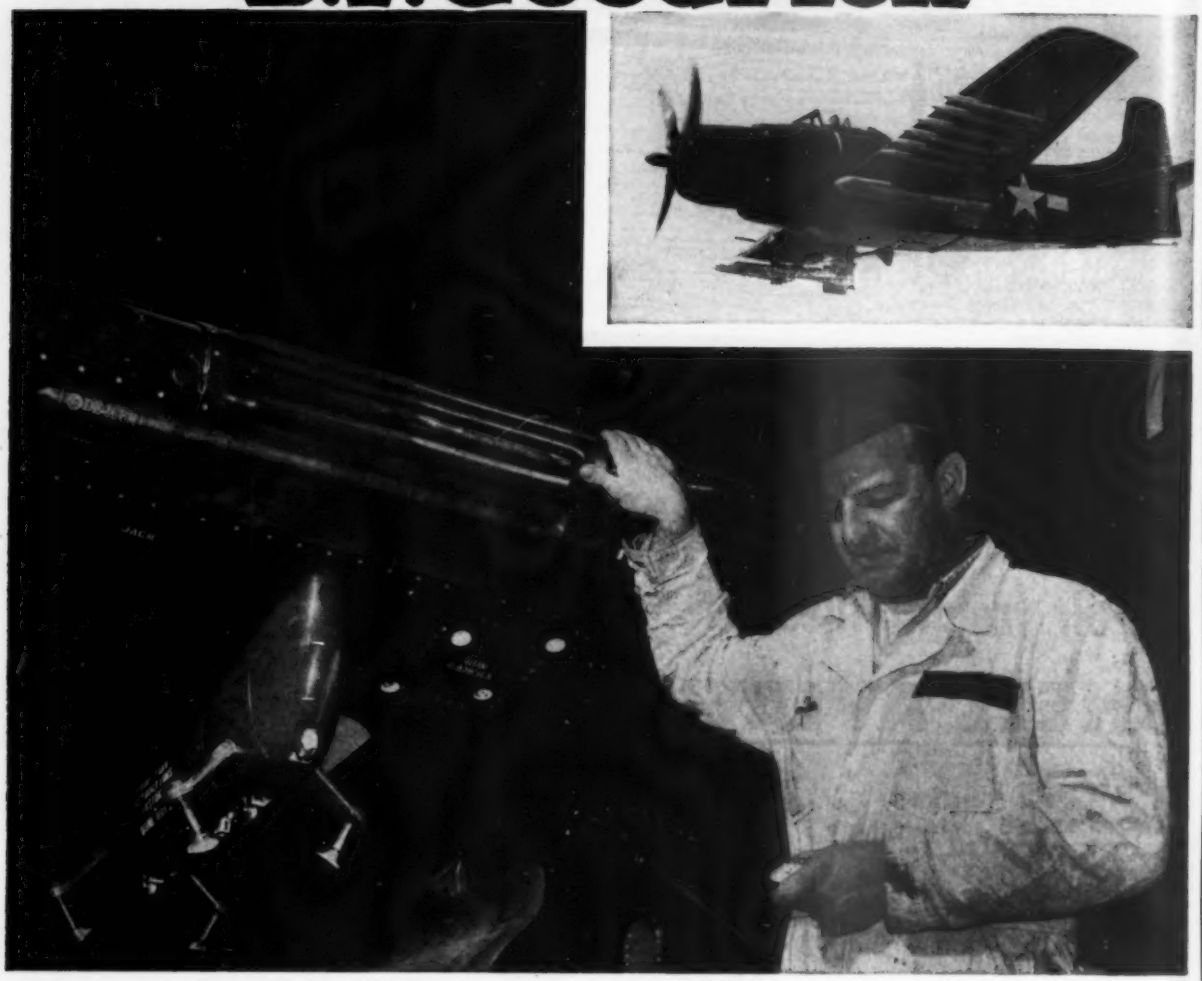


New De-Icer for fast night attacker proved in Korea

DOUGLAS SKYRAIDERS attacking with the fleet in Korea were forced to fly low at night because of the danger of ice forming at higher altitudes. They needed De-Icers—and fast.

De-Icers had never before been used on this type of high-speed plane. The Navy and Douglas brought the problem to B. F. Goodrich.

There were two big questions. Would De-Icers stay on at these high speeds? Would they upset the flight characteristics of the plane?

Within 32 days, BFG engineers in co-operation with Douglas designed, installed, and test-flew a new type of De-Icer on a Skyraider. The entire inner surface—not just the edges—of the new De-Icer was cemented to the wing. A screwed-on fairing strip was added for further reinforcement. Tested in a high-speed dive, the new De-Icers came through without a sign of damage. They had no appreciable effect on flight characteristics.

Quickly put into production, the De-Icers were soon seeing service over Korea, where they have done an excellent job.

These new BFG De-Icers operate safely at 15 to 18 lbs. pressure. They are light in weight, yet tough and long lasting. Take up little space for their plumbing. Are easily maintained. They are now proved practical for high-speed single engine planes as well as twin engine or larger.

The De-Icer, safest ice-removal device for airplane leading edges yet developed, is another product of B. F. Goodrich aeronautical research and engineering. Let us help you design De-Icers into your single engine planes. Write: *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

B.F.Goodrich

FIRST IN RUBBER

ESTABLISHED JUNE 1, 1937

American Aviation

VOLUME 15 NUMBER 20

Strikes, Shortages Beset Plane Production

Aircraft industry, hampered by present obstacles, cannot quadruple its output by 1953 unless . . .

By Robert M. Loebelson

WHETHER or not the United States plane production program is behind schedule apparently lies in the point of view.

According to the optimistic guess made by President Truman last December that aircraft output would multiply five-fold within a year, the U. S. is well behind the timetable.

And the production expectations laid down by the Defense Department after consultation with various airframe manufacturers are certainly not being met.

It is for those reasons that experts in and out of government have repeatedly stated, "America's plane production is behind schedule." One estimate was recently made by Admiral DeWitt R. Ramsey, president of the Aircraft Industries Association, when he declared we were six months behind.

But there are some individuals who believe the industry has done as well as could be expected. Chief among them is Harold R. Boyer, head of the Defense Production Administration's Aircraft Production Board.

Schedules Unrealistic

Boyer, a production expert, insists that the main reason plane output is behind schedule is that the original schedules are completely unattainable in view of the available supply of engines, electronic equipment and other components.

Boyer maintains that present production schedules are unrealistic. "I don't mind a program where the goal is just out of reach," he says. "But any program that can't possibly be met just makes no sense."

Still another viewpoint was voiced by Defense Mobilizer Charles E. Wilson in his just-released third-quarterly report to the President. In a section discussing production schedules, Wilson said, "In the over-all appraisal of the (defense) program at the present time, actual deliveries to date are frequently a misleading measure. To illustrate, actual deliveries to the Air Force on an important new airplane from one factory were 14 through mid-September against a delivery schedule of 36. This appears on the delivery record as a 61% shortfall.

"But," he added, "71 planes had been fully assembled, against 81 scheduled to have reached that stage—indicating that the main lags were not in production but in testing, modification and final adjustment prior to delivery."

Despite Wilson's optimistic reassurance to the President and the American people, the fact remains that military aircraft are not being produced in the quantities which the Pentagon would like. To quote the head of the Office of Defense Mobilization again, "Deliveries of aircraft . . . are now double the rate of a year ago. Nevertheless, within the next two years, deliveries are scheduled to rise to four times the present rate."

Using Wilson's figures as a base and assuming that plane output for the military at this time last year was about 225 a month (production in July, 1950 was at the rate of 215 a month), that would mean that we are now turning out 450 planes every 30 days and by September, 1953 will have reached 1,800 a month or 21,600 planes a year—a far cry from the military's expressed needs.

Other Shortages

And many production experts are skeptical that even this goal can be attained. They point out that even if the airframe builders can obtain the materials to produce that many aircraft, there are still other shortages which must be considered. Among them are:

- **Engines,** both jet and reciprocating;
- **Government-furnished parts,** especially electronics equipment;
- **Forgings;**
- **Skilled labor,** especially engineers, designers and machinists;
- **Machine tools;**

Where Strikes Have Hit

Prime Manufacturers

Company	Plant	Union	No. of Workers	Dates
Douglas Aircraft	Long Beach	UAW-CIO	10,000	Sept. 5
Douglas Aircraft	Long Beach El Segundo Santa Monica	United Aircraft Welders-Ind.	260	Sept. 12
Pratt & Whitney	Southington, Conn.	IAM-AFL	1,900	Sept. 19
Wright Aeronautical	Wood-Ridge and Garfield, N. J.	UAW-CIO	10,000 plus 5,000 refusing to cross picket lines.	Sept. 26

Suppliers

Aluminum Company of America (forgings)	Cleveland	UAW-CIO	2,100	June 11-July 30
Ex-Cell-O Corp. (engine parts)	Detroit	UAW-CIO	3,900	Sept. 13-Oct. 2
Carboloy Division, General Electric Co. (tungsten carbide)	Detroit	UAW-CIO	800	Sept. 14
Brown & Sharpe Manufacturing Co. (machine tools)	Providence, R. I.	IAM-AFL	5,000	Aug. 1

These shortages are inter-related; machine tools are needed to break the engine bottleneck; skilled labor is required to produce the machine tools and electronic equipment; and a shortage of forging capacity is forcing plane builders to produce the parts they need by other, more time-consuming and costlier methods.

Complicating the situation even more is the just-entered period of industrial unrest in the aircraft industry and impending shortages of steel, copper and aluminum.

Aircraft workers represented by both the United Auto Workers-CIO and the International Association of Machinists-AFL, as well as by several independent unions, have made demands of several major aircraft manufacturers in the last few weeks in an attempt to push beyond the legal ceiling of 10% over wages paid in January, 1950. On Oct. 1, for example, the UAW had more than 10,000 workers out at the Douglas Long Beach C-124 plant, 10,000 more at the Wright Aeronautical Corp. engine plants at Wood-Ridge and Garfield, N. J. (where 5,000 additional white collar and construction workers were refusing to cross picket lines) and was threatening to walk out at the Douglas-Tulsa plant where B-47's are slated for production.

Douglas Strike

The Douglas company was having its troubles with some 260 members of the United Aircraft Welders-Independent, who had struck not only at Long Beach but also at El Segund and Santa Monica, Calif.

Some 1,900 IAM members were also out at the Pratt & Whitney Aircraft Southington (Conn.) plant, causing the United Aircraft Corp. subsidiary to put 1,200 of its East Hartford facility on a 2½ day work week. P&W officials also blamed the cutback on two other UAW strikes which are now over, one against the Aluminum Co. of America forging plant in Cleveland and the other against the Ex-Cell-O Corp. parts plant in Detroit.

Contracts Coming Up

Few aircraft industry observers expected the strike epidemic to subside with settlement of these disputes because new IAM and UAW contracts were still coming up. Next possible targets of the UAW were the Glenn L. Martin Co., whose contract ended October 9, Fairchild Aircraft Division with a contract termination date of October 17 and Ryan Aeronautical Co., which faced an October 24 deadline.

The situation in materials is not much brighter. Production experts insist that the present program (quadrupling of plane output in two years) will not be attained unless and until a drastic revision is made in allocations of the necessary metals to the aircraft industry.

Toward that end, ODM, DPA, NPA and numerous other agencies will have to decide in the very near future whether to:

- Give the Defense Department and specifically aircraft, engine and propeller builders more of the available supply of controlled materials at the expense of consumer durable goods manufacturers, or
- Maintain the present ratio between military and civilian production until present expansion programs produce enough to satisfy the demand for both bombers and automobiles.

Wilson, DPA Administrator Manly Fleischmann and other Government officials have been warning consumers that shortages of durable goods like refrigerators and television sets are coming up. But they have been postponing the decision as to how serious these shortages will be.

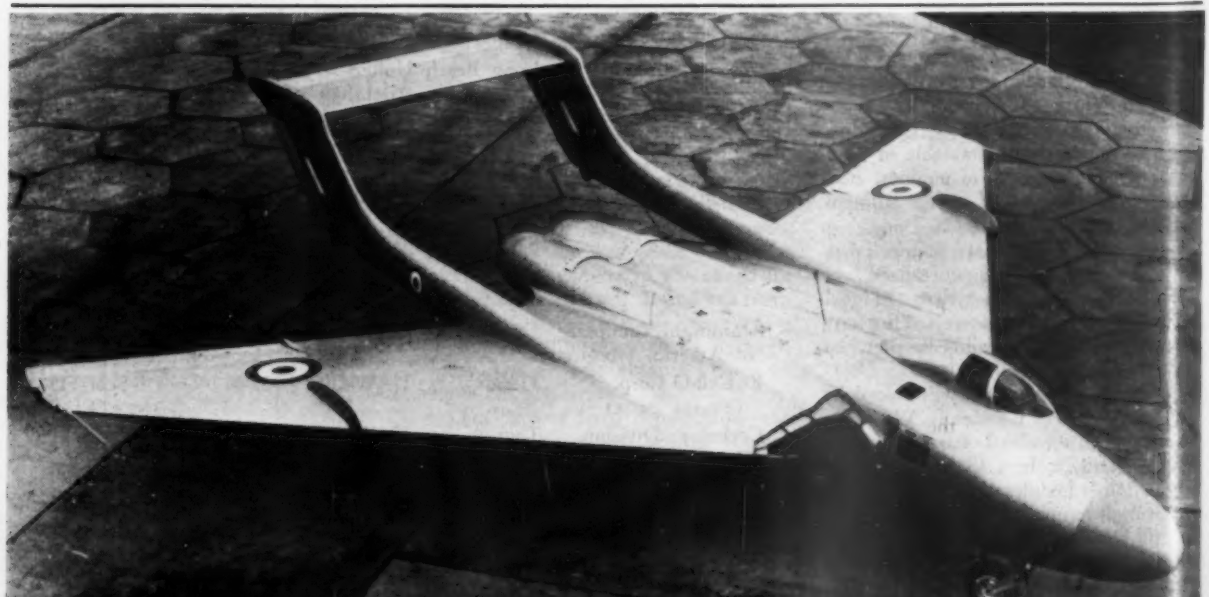
In other words, until the expansion program for the basic industries starts turning out the needed materials, the U. S. cannot have figurative guns and butter. Which will we have?

One clue lies in a series of conferences now under way on aluminum cutbacks. Several factors have made it mandatory that allocations of the metal be reduced, among them a drop in imports from Canada as a result of strikes and a loss of production of some 4,000 tons a month as a result of the power shortage in the Pacific Northwest. If the drought there continues, the U. S. faces the loss of as much as 100,000 tons of aluminum within six months—20% of this country's primary production.

With these factors in mind, defense officials are trying to determine whether to slash civilian allocations by about 30% or cut both the military and civilian agencies by about 10-15%. Informed sources expect the reduction to apply equally to both, with a consequent large drop in plane production.

Lag May Continue

If copper is used for television sets as well as electronic equipment for aircraft; if stainless steel goes to automobile builders as well as plane engine manufacturers; if aluminum, molybdenum, nickel and tungsten are not scheduled almost solely for plane production and other defense items, there will be no large-scale output of military aircraft and present schedules will continue to lag.



FIRST PHOTO of new British day-and night fighter, the de Havilland 110, which recently made its first test flight. Well-equipped electronically, the new jet is credited with 'very high' performance. Engines are Rolls Royce Avons

Needed: 1 Million More Plane Workers

With labor pinch already felt, industry will need government help to triple personnel.

By James J. Haggerty, Jr.

THE aircraft industry, already well-harried by strikes, material shortages, component scarcity and a variety of other problems, is now facing a new crisis: where and how to get the people to handle the requirements of a greatly expanded industry.

According to official estimates, aircraft production will quadruple in the next two years. This will mean a production program of something on the order of 20,000-25,000 planes a year when the peak is reached, about mid-1953 or shortly thereafter. To handle a program of this scope, Aircraft Industries Association estimates that the industry will require about 1,500,000 workers. By AIA's definition, the industry includes manufacturers of airframes, engines, propellers and components.

Current employment in the aircraft industry is about 550,000. Thus, the industry is faced with the problem of just about tripling its current employment in the next two years, a problem that makes personnel managers shudder. Even now the labor pinch is beginning to be felt.

Semi-Skilled Labor

Generally, the industry does not yet have a serious manpower shortage, as far as run-of-the-mill factory jobs are concerned, although even in the semi-skilled categories the labor supply is anything but copious. But we are still a long way from peak production. Actually, we are just now starting to emerge from a long period of production preparation and tooling. Although the current rate of production is only about 430 planes a month, in a short time it will start to rise on a sharply ascending curve. That's when the employment problem will get critical.

Shortage Critical

The situation as regards skilled workers—mechanics, engineers and technical help—is much more serious. Even now the shortage is critical and shows promise of becoming more critical, because:

- **While training new workers** for some minor jobs can be accomplished in a matter of weeks, training skilled help is a long term proposition.
- **Engineering personnel,** generally, can be trained only in colleges. The number of engineering graduates in 1951 was 38,000; in 1952 it will be down to 20,000 and it will go progressively lower in the following years. Further, a large number of engineering graduates go into the armed forces; in 1951 this proportion was 30%.
- **Despite a decreasing source of supply,** the need for engineers is becoming greater because airplanes are becoming more and more complex.
- **Experience gained in other industries** by skilled workers is of little value in the aircraft industry.
- **The "broadening the base" policy** has created thousands of new companies working on some phase of the aircraft program, and they are actively competing with the established industry, in some cases "pirating" help by offering larger salaries.

Few Transfers

- **Skilled laborers already established** in a non-aviation industry are reluctant to transfer, because they know that the aircraft industry works in cycles and prospers only in times of emergency. In addition, they would have to abandon their seniority and pensions in their former industry, and would be the first to be dropped from the payroll should international conditions return to normal.
- **Lack of adequate housing** in aircraft plant areas keeps a lot of potential help out of the industry.
- **All companies have lost skilled help** to the armed services because of recall to active duty of reservists. As the production program gets into swing, so, too, will the services expand and the recall programs will be accelerated.

In World War II, employment in the aircraft industry reached a peak of 2,102,000 workers in 1943. It is logical to ask why these people cannot be coaxed back into the industry. There are several reasons.

One is their own personal reluctance, mentioned above, to leave an established position in a civilian industry. Another is the fact that those persons considered skilled in aircraft work in 1943 might not even be semi-skilled now, due to increased complexity of aircraft.

A third factor is the urgency of getting a defense job. During World War II, an impending draft call chased many a worker into the aircraft industry seeking an essential job. During the cold war, or tension period short of an all out war, the draft must necessarily be a limited one and will be confined, for the most part, to younger men, most of whom are not skilled labor anyway.

Women Workers

Finally, there is Rosie the Riveter, the woman worker who filled many an important post in the aircraft industry during World War II. Women made up an estimated 40% of the World War II peak employment. But it won't be as simple this time. While women can fill and are filling a number of minor production posts, the number of jobs women can handle is steadily de-

creasing. Again aircraft complexity is the major factor; new planes require greater skills, heavier materials to handle and heavier machinery to operate. One company estimates that women will be able to fill only 20% of its manpower requirement, due to these factors. If that ratio holds true throughout the industry, half of the Rosie the Riveter potential will be lost.

There is the problem which confronts the expanding aircraft industry. What are the solutions?

One major solution is government regulation of the available labor pool, although it is doubtful that political expediency at any time short of an all-out war would permit it. But, although opinion is divided on the subject, some industry observers feel that it will be necessary if the industry's requirements are to be met.

There are some other proposed solutions:

• **Even greater subcontracting** than is now practiced, thereby giving the industry a larger recruiting area. But some observers feel that subcontracting aids more in utilization of facilities than in manpower savings, since the subcontractors will be competitors in the labor market.

Deferments Needed

• **Obtaining the cooperation of Selective Service** in granting deferments to aircraft trainees. This would permit establishment of a long range apprentice training program in the industry. This proposal is now being discussed by Selective Service and the Department of Labor.

• **Obtaining similar cooperation** from the Department of Defense to adopt a policy of extreme leniency toward skilled workers now in the industry.

• **Construction of defense housing.** This, however, is not an immediate solution. Congress had passed Public Law 139 providing for the construction of defense housing. But the President's signature on the bill does not create houses overnight. It will take some time to construct this housing and prospective workers are not likely to be lured into the industry in areas where there is now a housing shortage until this housing program is completed.

• **Job simplification,** but this might mean hiring two workers for one job, sending up costs and complicating the recruiting program.

• **Payment of larger salaries** as enticement, but the industry is already well burdened in this respect and such a program would send the already astronomical costs of aircraft even higher.

It might be noticed that practically all of the proposed solutions have a string attached, an indication that the problem of tripling the industry's labor force is going to be a tough one. It is going to require a lot of help, from the Department of Defense and from other government agencies. Steps have already been taken to secure that cooperation. It is going to require an intensive recruiting program and all the ingenuity the personnel managers of the industry can muster.

AF Expansion Will Stress Tactical Air

JCS okay build-up to 140 wings; AF will ask further increase in strategic forces.

THE Air Force has received a Department of Defense green light to start another expansion of its combat force, this time to about 140 wings. After weeks of argument, the Joint Chiefs of Staff, faced with a directive from new Defense Secretary Robert A. Lovett to come up with a decision by Oct. 1, settled upon the compromise figure.

Informed sources say expansion beyond 95 wings will be largely in tactical air power.

Expansion will start immediately. The final version of the fiscal 1952 defense appropriations bill provides for an additional $1,000,000,000, over and above the original budget requests, for expansion of air power. It is understood that the Air Force will get the lion's share. This extra money will permit the USAF to start ordering long load items, such as electronics equipment and certain types of planes, for delivery after the previously authorized strength of 95 wings is attained, some time in the fall of 1952.

Approval by the Joint Chiefs of Staff does not, per se, constitute authority to proceed with the program, but it has been expected that Congress, which is now very much pro-air power, will go along with the recommendations of the Administration.

The Senate had originally voted $5,000,000,000 for a start on air expansion, but in conference with the House this sum was cut back to $1,000,000,000. This created the impression in some quarters that Congress was losing its zest for additional air power and intended to curb the build-up ambitions of the Air Force and Navy. However, although there has at present been no official statement on it, it is believed in informed circles that the $4,000,000,000 cut from the Senate version of the bill represents only a postponement, not a cut.

Can't Spend More

This opinion was partially confirmed by Rep. George Hahon (D., Tex.,) chairman of the important military subcommittee of the House Appropriations Committee, who said that the $1,000,000,000 would provide ample funds for air expansion orders between now and Jan. 1, when Congress will again be in session. This was interpreted to mean that the $1,000,000,000 is all the services could effectively spend during that period.

Timetable for the attainment of the 140 wings is mid-1953, although complete modernization of that force will probably not be achieved until some time in 1954.

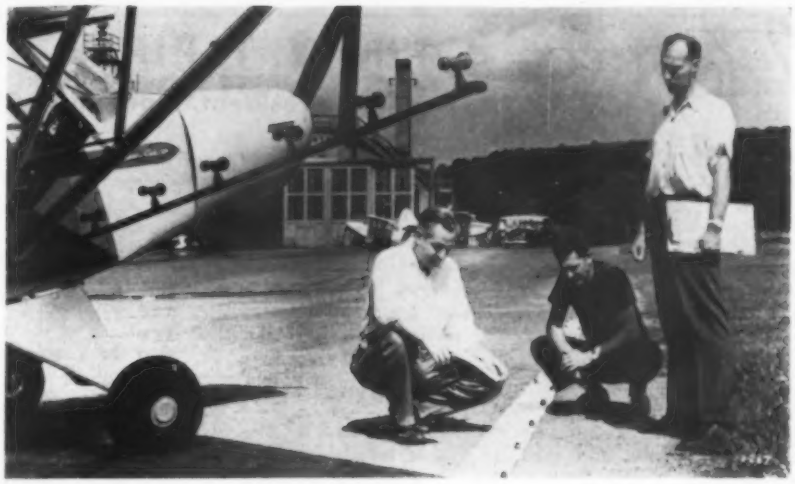
But although the 140 wings will serve as a USAF goal for the time being, there is still some question as to whether it will be the ultimate goal. The Air Force proposal to the Joint Chiefs of Staff was for 163 wings, which was, and still is (though the Air Force must now be cagey about admitting it, having agreed to the Joint Chiefs program) the minimum force necessary to handle its global commitments. There are indications that the USAF will continue to plump for the 163 wing force, though on a sub rosa basis.

There is no information available as to the proposed 140 wings, but reports are that the expansion beyond 95 wings will be largely in tactical air power.

The Navy's original opinion on Air Force expansion was that it should be expanded about 15 wings, or to a strength somewhere in the neighborhood of 110 wings. But strong Army determination to bring about a greater build-up of tactical air power is believed to have been the major factor in bringing about the JCS 140 wing compromise.

But while the Air Force is firmly convinced of the need for a build-up of its tactical air power, its detractors to the contrary, it is equally convinced of the necessity for further expansion of its strategic forces.

Russian developments in the long range bombing field have convinced top USAF leaders that atomic bombing of U. S. targets is now possible on a one-way basis and that known new developments will make the situation even more serious. For this reason, the USAF has revised its strategic concept to make aircraft plants the Number One priority targets, instead of industrial cities.



NEW AGRICULTURAL DEVELOPMENT DIVISION of Piper Aircraft Corp., is headed by (left to right) Rex Taylor, chief of the experimental division, Alfred B. Monroe, agricultural pilot, and Howard Piper, assistant to the president. The group will work on improved dispersal units for agricultural spraying by air.

AIR FORCE UNDER SECRETARY John A. McCone (right) was greeted by Boeing president William M. Allen (left) and Wellwood E. Beall, vice president-engineering and sales, when he inspected progress on the XB-52 bomber and C-97 Stratofreighter production lines.

Manufacturing People in the News

...W PRODUCTION DIRECTOR for Republic Aviation Corp. is Frederick O. Mul... who formerly held a similar post with ... Glenn L. Martin Co. and later headed ... own automobile agency. He will administer the procurement of all direct, indirect and subcontract items for Republic.

GENERAL MANAGER of General Electric Co.'s new Defense Products Division is John W. Belanger, a GE vice president. The new division comprises the Aircraft Gas Turbine Department at Lockland, Ohio, and the Aeronautic and Ordnance Systems Department, Schenectady.

BRIG. GEN. HORACE A. SHEPARD has joined Thompson Products, Inc., as a vice president after resigning from the USAF after 17 years of service. The youngest general officer in the Air Force, he was its Director of Procurement and Production Engineering.

Interview—with W. T. PIPER

President, Piper Aircraft Corp.

William T. Piper, father of the famed Piper Cub, was born at Knapps Creek, N. Y. in 1881 and spent his early years in Bradford, Pa. Graduating from Harvard University in 1903, he began his career as a construction engineer with United States Steel Corp. After 10 years of engineering service throughout the country, he returned to Bradford and formed a partnership to produce oil. He served during World War I as a captain in the Engineer Corps.

It was not until 1929 that Piper entered the aircraft industry, and then only as a member of the board of Taylor Brothers Aircraft Corp., a Bradford concern. In 1931, at the age of 50, he learned to fly one of the Taylor Cubs and has kept his license current ever since.

During the lean years of the depression, Piper kept the Taylor company going with money from his oil business and in 1936 he bought control of the company from C. G. Taylor and became president and chairman of the board. Taylor went to Alliance, O., to start the Taylorcraft Co.

Piper has held control of the company ever since and expanded it to its current prominent position in the light plane industry. Associated with him in the company are his three sons: William T., Jr., secretary; Thomas F. ("Tony"), vice president; and Howard ("Pug"), in charge of production and experimental work.

Piper Views Military, Civil Markets

Q. Mr. Piper, can you tell us how the expanded military aircraft programs have affected Piper's work load?

A. Well, it brought us quite a bit of subcontract work. We are working for three major companies, all of whom have important military contracts. We're building parts for Bell helicopters, Grumman fighters and Lycoming jet engine starters. In addition, we're building military lightplanes: the L-21A, a 125-horsepower Army liaison plane, and the L-18C, a 90-horsepower model which is being shipped abroad under the Mutual Defense Assistance Program. Both models are versions of our Super Cub.

Off the Shelf

Q. What is your current backlog?

A. About $6,000,000. But we don't carry a large backlog like the bigger companies. In commercial sales, we operate something like a grocery store—you come in and buy an item off the shelf.

Q. What proportion of this backlog is in subcontract work?

A. A large proportion. As I said, we don't usually have much of a commercial backlog as such. Maybe three quarters of our backlog is in subcontracts and most of the remainder is for L-21's and L-18-C's.

Q. Do you think the Army is placing enough emphasis on lightplanes?

A. I don't think they're placing enough emphasis on the combat utility of lightplanes. I think that they should use them for front-line work, not just for liaison. You don't want big, heavy jets for front-line operation. The Army is missing a bet in not developing lightplanes for that work. In our Super Cub, for instance, we could carry about 400 pounds of explosive—machine guns or something like hand grenades. And we could sell them for a small fraction of the cost of a jet.

Q. Are you selling many planes for agricultural use?

A. There is quite a bit of interest in our agricultural planes, which are duster and sprayer versions of the Super Cub.

Q. What do you think of the new agricultural plane developed by the CAA and Texas A & M?

A. It might be successful. It has some new safety features and it carries a bigger load than our Super Cub. But I'm not sure about its sales potential. A plane like that will have to sell for about $20,000, compared with about $5,000 for our plane. It has been our experience that a farmer doesn't mind paying big money for a tractor or trailer, which he'll have for years, but he's squeamish about putting a lot of money into a duster or sprayer which might crack up. I think the farmers will still be interested in the low-price plane which can do practically the same job.

Q. What commercial planes are you now turning out?

A. Basically, the Super Cub and variations of our Pacer models. The Super Cub is a two-place, enlarged version of the old Cub. It sells for between $3,600 and $4,600, depending on the version. Then we have the four-place Pacer with either a 125 or 135-horsepower engine, selling for $5,100-$6,200, and the Tri-Pacer, the same plane with tricycle landing gear and coordinated aileron-rudder controls, selling for $5,300-$6,300. We think the Tri-Pacer is about the closest thing to an automobile, from the standpoint of simplicity of operation.

Q. Is the Tri-Pacer providing any competition to the Bonanza and Navion?

$10,000 Price Spread

A. We're not cutting into their market exactly. But remember we have a price spread of close to $10,000 in our favor. There are a lot of people who want a reasonably fast, low-priced, cross-country plane and we have that in the Pacer line.

Q. Do you anticipate price increases in your aircraft?

A. If everything else goes up, I don't see how we can hold the line. If a dollar buys less clothes and bread, it also buys less airplane. But we'll still be in the low-price field by comparison.

Q. What do you think of the Helioplane?

'. . . Trend is Definitely Away from the Two-Place Airplane'

A. From the competitive standpoint, I'm not much alarmed. I think its emphasis is in the wrong place. I don't think slow-flight and slow-landing characteristics have any particular appeal to the personal plane buyer. The most successful planes have always been those which could offer more speed. The airplane is going to follow the lines of the automobile; landing speeds will go up, not down. But we need more and better airports for that and they'll be coming along. I think that some day we'll be spending money for airports as liberally as we now spend it for highways.

Q. Do you think then, that some government agency, say CAA, should put more emphasis on a development program for small airports?

A. No, I think the federal government should stay completely out of it. It should be a local civic deal, like highways. I can look back at the day when it seemed positively foolish to build a hard-surfaced road in a country area. I think local airport construction will follow the same pattern. People had money to spend on highways because they meant more driving safety; they'll put money in airports for the same reason. For instance, if a man in a lightplane gets into a storm, he won't have to go back a hundred miles to find a place to land; there'll be an airport near him.

New Lightplane Uses

Q. Do you see a good market for lightplanes, excluding military, in the next few years?

A. I think the market will pick up. We're learning new uses for lightplanes every day. The industry has been going through a very severe sickness. We loaded people up with planes of small utility—training planes. When the training market collapsed, the lightplane market went with it. What was needed was a line of planes with capacity, fair speed and fair range.

The trend is definitely away from the two-place airplane. Well, we've got planes with capacity, speed and range now, and I think we'll be selling them.

Q. Do you think the fixed base operator will be a market for new planes?

A. I think the fixed base operator is going to come back in a big way, but he should replace his old equipment with some new planes which will make people want to fly them. I think that eventually we'll go into a livery stable era, where folks will rent planes like they rented horses and buggies. The average person doesn't make enough trips to justify ownership of a plane, but there are occasions when he could rent a plane for a special purpose.

Every transportation system has a niche where it can't be competed with. The real advantage of a plane is that it can make a fairly long trip—150 to 300 miles—and return in the same day. People will get around to using it for that purpose in large numbers.

I'm not at all pessimistic about the future of the light airplane. But we'll have to weed out the weak sisters in the industry and we'll have to work at promoting it. We've gone through the barnstorming era and the training era, and we're now in the transportation era. The public doesn't know it yet; we must tell them.

Women Pilots

Q. Do you have any ideas for promoting lightplanes?

A. Well, for one thing, I think we ought to concentrate more on selling them to women. Nothing is ever successful without the interest of women. We should sell more women on flying. If, for instance, we could get the "bell cow," the female community leader, to go out and take flying lessons, the whole community would follow. You can't imagine what it would do for the industry if we could get such a program moving all over the country.

Q. You once said that flying was a young man's game. Do you still think so?

A. I've changed my mind completely. Personal flying takes two things—leisure time and money. Generally, you find these two things only in the older group of people.

Q. Are you getting much export business?

A. Quite a nice volume—about 12% of our output. It's coming along very nicely. The biggest trouble is lack of dollars.

Q. The Spanish have recently come up with a new lightplane. Will that affect your sales in that area?

A. We haven't been doing any business in Spain, either. We had some in Portugal. I don't know what effect the Spanish plane will have.

Delays, Not Shortages

Q. Are you having any trouble getting materials for commercial production?

A. Yes, some. Generally it's a matter of delay than shortage. Sometimes we finish planes but have to let them sit around because of lack of some piece of equipment which should have been installed on the production line.

Q. Does your use of fabric covering instead of metal skin ease the materials problem?

A. Not much. We use a lot of metal. Except for the covering and the wing bow, our planes are now all metal. The small amount of metal we have on fabric covering wouldn't make much difference.

Q. It has been said that your fabric is harder to burn than some metals. Is that true?

A. I think so. The fabric is mercerized cotton, extremely tough, covered with butyrate dope. We call it Duraclad. You can put a cigarette lighter under it and nothing will happen.

Q. How did the recent flood at Lock Haven affect Piper?

A. After insurance, it cost us about $100,000. The completed planes were insured but those on the production line were not. A large number of them had to be completely scrapped. We've taken steps to prevent a recurrence. We've moved items which might be damaged to a higher level and we're constructing a built-up storage area for completed planes.

No Expansion Now

Q. Does Piper plan any major plant expansion program?

A. Not at the present. We don't have enough work. If we have to, we can expand right here at Lock Haven, but that might be a serious handicap when business gets back to normal; we would have too much money tied up in facilities.

Q. Are you getting all the help you need?

A. We get what we need without too much trouble. We're trying to bring our expansion along very gradually. We don't want to overextend ourselves.

Q. Do you have any plans for a larger plane, something along the Twin-Bonanza lines?

A. We've considered it, but we have nothing concrete. We like to stay in the low-price field.

How Good is U. S. Aircraft Plant Protection?

Munitions Board rates plane industry high, but urges even closer watch for sabotage.

By Richard Fuller

THE U. S. aircraft industry, a high-priority target for saboteurs, is considered by Munitions Board experts as tops in the nation in the extent of its plant protection plans.

However, with more intensive sabotage and espionage activities a probability, an even further tightening of restrictions is urged.

It is believed that a fifth column of Communists is in the process of infiltrating the key U.S. industries upon which the national security depends. Basic assumption is that in the future the delineation between war and peace may be less sharply defined and that increased sabotage activities may heat up the cold war.

The Munitions Board asserts that present plans of U. S. enemies call for:

Collecting intelligence on plants vital to U. S. war-making potential.

Making plans for attack against and internal disruption of U. S. production effort.

And here's what enemy agents are looking for in the aircraft industry:

Plant capacity, production rates, mobilization schedules, details of orders on hand.

Plans and specifications of planes.

Test records of new planes.

Destination, transportation routes of finished aircraft.

Data on production methods.

Critical plant points where sabotage would be especially effective.

Security countermeasures, guard-inspection schedules, etc.

Dissatisfied labor elements ripe for subversion.

Potent Force

The present approach to industrial security is developing along sound lines into a potent protective force, according to Robert Applegate, of the Defense Department's Munitions Board.

While plant-protection measures taken in World War II were effective, industry was handicapped by the fact that the program did not get under way until just prior to Pearl Harbor, he said. This time, if war comes or if enemy sabotage increases in intensity, the U. S. will be better prepared than ever before.

Plant protection breaks down into two basic tasks:

- **Prevention of espionage.**
- **Protection of industrial facilities** and government secrets.

Both jobs are the responsibility of industry itself, aided and advised by the Department of Defense. Immense scope of the problem of plant protection requires that responsibility be assumed locally. For instance, during World War II, more than 120,000 plants were working either directly or indirectly on defense orders. If 10 soldiers had been assigned to guard each plant, an army of 1,200,000 men would have been needed.

Board Sets Policy

Munitions Board has responsibility for setting policy and arriving at general principles for efficient protection of all plants engaged in work with classified military information. This means that almost the entire industry engaged in aircraft manufacture—more than 50,000 plants—receives security aid from the Munitions Board. For an Air Force contract, security policy for the contracting plant is set by the Board, and the Air Force supplies liaison officers to work with plant management in putting measures into effect.

Because of the ever-present danger of sabotage or blitz atom-bombing, not only are security standards necessary for plants working with classified military information, but also steps are being taken to protect U. S. industry engaged in non-classified but important production work.

Early this summer, Secretary of Commerce Sawyer announced establishment of two coordinated Boards to put into effect measures to safeguard the entire complex of the U. S. war potential. These Boards are:

- **Industrial Evaluation Board** under the Department of Commerce.
- **Facilities Protection Board** under the National Security Council.

Nation-Wide Security

These Boards are currently establishing and putting into effect standards of security for all industrial plants and their service facilities, storage warehouses, communications centers, water systems, and sources of raw materials.

Measures are being instigated to protect air, rail, highway, pipeline, and water transportation systems, as well as vital stockpiles essential to the peacetime economy and to efficient mobilization.

Plan Works

Coordination between a government agency and an individual plant, with the government providing doctrine and guidance, works effectively. There is something unique about every plant from a security point of view. No federal agency can know all the security problems of innumerable individual plants. These problems are the direct responsibility of top management, the men who know their plants best and are in a position to solve problems on the spot.

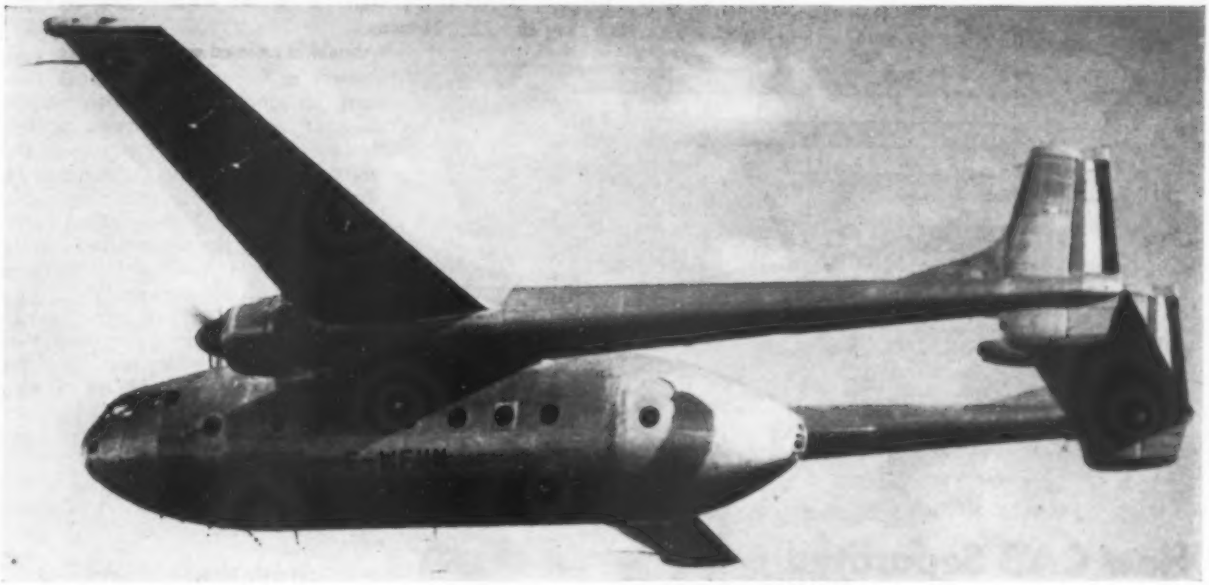
On the other hand, Munitions Board members, walking around a plant to have a look at security measures, sometimes are able to call attention to weak links in the security chain. Comprehensive security programs have been worked out on the basis of this management—government coordination.

An effective program of plant security foresees possibility of enemy action in the form of espionage, sabotage, and outright attack, in which anything from atomic bombs to bacteriological killers is used.

Simple But Lethal

But it is believed that the gravest current danger stems not from the subversive wearing a beard and carrying an atom bomb in a suitcase. U. S. enemies are too economical and intelligent to use this method of destruction. An atom bomb is an expensive weapon, and the saboteur would have a relatively tough time getting it into any reasonably well-guarded plant. Far more dangerous is the innocent-appearing and sometimes well-trusted employee who carries in his pockets nothing more lethal than a package of cigarettes and matches.

Fire is the saboteur's simplest and most effective weapon. A lighted cigarette with its unlit end held between the heads of the matches in an ordinary match flap and then placed under a gasoline-soaked rag in the paint shop is the world's most efficient time bomb. If a plant's sprinkler system were turned off just before the cigarette bomb were set, the plant would be in flames just about the time the saboteur reached home after setting the bomb 15 minutes before quitting time.



FRENCH CARGOPLANE, Nord 2501, is powered by French-built Bristol Hercules engines. French Air Force has ordered 177.

French Air Force Orders New Cargo Plane

177 Nord's scheduled for military use starting in 1953; civil users also interested.

FRENCH Air Force has ordered 177 Nord 2501 cargo planes which will be built by the Societe Nationale des Constructions Aeronautiques du Nord (SNCAN). Some of the manufacturing has been subcontracted to other companies, with S. A. Louis Breguet doing 25% of the airframe work.

Deliveries are scheduled to begin early in 1953.

Nord 2501 is powered by two Bristol Hercules 739 engines built in France under license by SNECMA.

Resembling the Fairchild C-119 Packet, the Nord cargo plane was built in accordance with specifications set by the French Air Ministry for a medium-tonnage cargo carrier. Though designed specifically for military use, the airplane has already elicited considerable interest from French airlines.

Nord 2501 specifications are:

Empty weight	25,745 lbs.
Empty weight—equipped	27,352 lbs.
Crew	794 lbs.
Fuel and oil for 930 miles with 15.5 mph headwind	4,762 lbs.
Military load	10,302 lbs.
Gross operating weight	43,210 lbs.
Economical cruising speed at 15,000 feet	215 mph

Volume of the plane's hold available for cargo is 1801 cubic feet. This gives enough room for transportation of light and medium vehicles (two command cars or three jeeps). The plane can be used to carry packaged equipment for air drops, parachutists, or casualties. It is also equipped for the towing of medium gliders.

First production Nord 2501 off the assembly lines is scheduled to be loaned by the military to civilian authorities for evaluation of commercial possibilities. Air France is reported "interested" in the new plane for use on its French Metropolitan all-mail routes, while private lines would use it for transportation of passengers and freight.

In anticipation of civilian requirements, a special modification of the plane has been designed to seat 44 passengers. This version would provide special low-cost air transportation on some internal routes of the French Union.

Although SNCAN is going ahead with production of civilian models, it is difficult to predict when they will come off the production line.

NEW FRENCH NORD 2501 can carry two command cars or three jeeps.

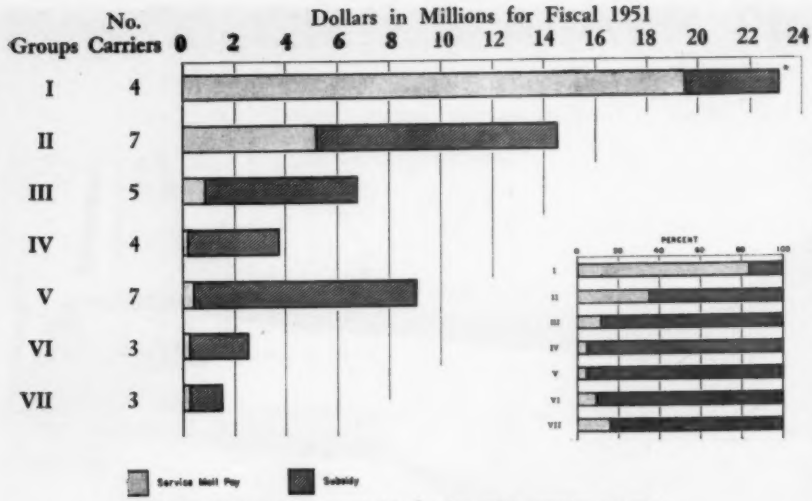


CHART SHOWS how subsidy varies with carrier groups.

How CAB Separated Mail Pay, Subsidy

Revenue ton-miles per station used to set up 7 airline groups with varying service rates.

By William V. Henzey

CIVIL Aeronautics Board last week wiped out the much-criticized practice of including government subsidies in domestic airline mail pay. By so-called "administrative action," the Board made it clear just how much subsidy and how much compensation has been and will be included in mail pay to the domestic airlines.

The complex separation of the two elements, a thorn to government and industry since regulation was begun 13 years ago, was accomplished by CAB with surprising simplicity. And it comes at a time when Congress is about to enact legislation to make such separation mandatory.

Actually, the payment of subsidy by the government to an industry strictly regulated by it has been greatly overemphasized by opponents of the certificated air industry. But the "hidden" nature of such subsidies has given grounds for some just complaints, and the CAB move and proposed Congressional legislation appear highly warranted.

Seven Groups

CAB's formula divides all domestic airlines, trunk and feeders alike, into seven distinct groups. To each group is assigned a so-called "service rate" which represents what CAB recognizes as the amount of mail pay per ton-mile the airlines in each group deserve as compensation for the actual carriage of mail. Any amount received above that figure is to be considered government subsidy.

A carrier's presence in a particular group is determined by the number of revenue ton-miles per station transported by it. For example, to be classified as a Group I carrier, an airline's average revenue ton-miles per station must fit into a range between 2 and 10 million; for Group II, range is between 500,000 and 2 million, and so on down to Group VII where the range is from 20,000 downward.

Once classified in a group, a carrier is subject to the "service" rate for that group and any excess over such rate is considered subsidy. Here is how the 33 carriers have been grouped by CAB for the year ended June 30, 1951 (fiscal 1951) together with the service rate per ton-mile assigned each group:

Group I—45c: American, Eastern, TWA and United.

Group II—53c: Braniff, Capital, Chicago and Southern, Delta, National, Northwest and Western.

Group III—75c: Colonial, Continental, Inland, Mid-Continent and Northeast.

Group IV—91c: Piedmont, Pioneer, Robinson and Southwest.

Group V—$1.48: All American, Bonanza, Empire, Frontier, Trans-Texas, West Coast and Wisconsin Central.

Group VI—$2.58: Lake Central, Ozark and Southern.

Group VII—$7.26: Central, Mid-West and Wiggins.

On the basis of forecasts for the next two years, CAB expects Northwest to move into Group I in 1952; Pioneer into Group III in 1952 and Piedmont into Group III in 1953; Lake Central and Ozark into Group V in 1952; and Central into Group VI in 1952. All of these changes result from anticipated increases in revenue ton-miles per station.

It should be pointed out that the four carriers in Group I for fiscal 1951 receive no more mail pay than the 45c ton-mile service rate assigned to their group. They operate free of subsidy and are the only airlines in the domestic industry now on final rates. Soon, National is expected to be placed on a service rate of 53c. But the remainder of the industry receives mail pay in excess of the specific service rates set.

In arriving at service rates for each group, CAB bases its theory mainly on the detailed cost information developed in processing a service rate for the "Big Four." Extensive studies and conferences produced an average cost figure for those carriers for fiscal 1951 of $0.3420 per revenue ton-mile. Accordingly, 45c was deemed a reasonable mail service rate per ton-mile.

Statistical Standard

To eliminate repetition of this extensive development process for each carrier, CAB hit on a statistical measure whereby the rate for each of the other six groups bears the same percentage relationship to the Group I 45c rate as the average cost for each of the six groups bears to the cost for Group I.

For example, the average cost for the Group IV carriers is $0.6952 per revenue ton-mile or 203.27 per cent of the average cost for Group I. Thus, this same percentage of the 45c rate for Group I, produced the 91c rate applicable to Group IV.

For the domestic industry as a whole, application of this formula reveals that of the total mail payments for fiscal 1951 of $61 million, $27 million was service pay and $34 million subsidy. By 1953, CAB estimates $55 million will be paid the airlines, of which only $24 million will be subsidy or 30% less than in 1951.

By themselves, however, these figures may be misleading. For example, in 1953, according to CAB forecasts, the *domestic industry will receive only 3.1% of their total revenues from mail subsidies*. In fact, for 1951 for which actual figures are available the percentage of subsidy to total revenues is only 5.5%.

Thus, the advantages of separation become apparent. Government and industry alike can see at a glance just how much the industry depends on government help for development on a year-to-year basis.

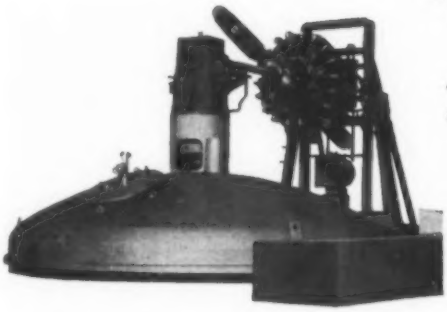
Individual companies, assigned to a group with an average cost figure, will have an attainable goal to shoot at in conducting their operations. And the CAB, charged by Congressional mandate with fostering and developing a sound air transport system, will have an

Aeroprops

to speed the Fairchild Packet on its way!

Vast power lifts this 35-ton Flying Boxcar . . . power converted to lift and speed by Aeroprops. And the power of this mighty engine-and-propeller combination gives new mobility, range, and striking power to the fighting men of our armed forces.

The propellers for this giant C-119 are another example of the vision of Aeroproducts engineers . . . vision and pioneering spirit that have carved an enviable position for Aeroproducts as a leader in propeller design.



Developed under Navy and Air Force contracts, the world's first supersonic spin pit is now in operation at the Aeroproducts Division of General Motors. This new technical advance permits study of new Aeroprops spinning at supersonic rotational speeds.

The same organization is available for consultation if you have any problems in the subsonic, transonic, or supersonic range. Aeroproducts—backed by the full facilities of General Motors—will be glad to serve you.

AEROPRODUCTS DIVISION
GENERAL MOTORS CORPORATION
DAYTON, OHIO

GM
GENERAL MOTORS

Building for today
Designing for tomorrow

AEROPRODUCTS GM

Aeroproducts

accurate gauge upon which to base its decisions for route expansions, retractions or consolidations, and, of course, mail pay.

For the future, on an annual basis, CAB will issue complete reports of the airlines not only for the previous fiscal year, but on a projected basis for the subsequent two years. These reports will clearly show how much was paid each line as subsidy and how much as actual compensation for carrying the mails.

Further, starting next year, the reports will deal with international separation as well as domestic. CAB is now working on its first separation for the international carriers and expects to produce it no later than June 30, 1952.

Since this is the first concrete step ever taken to accomplish separation, CAB looks to a refinement of its program as a result of experience gained in the next few years. Board points out, however, that the present program can be geared to such legislation as may be enacted by the Congress.

Whether or not the Post Office Department, actually charged with the physical payment of dollars to the airlines for mail pay, will object is problematical.

Separation of Service Mail Pay and Subsidy

Fiscal Year 1951

Group I Carrier	Revenue Ton-Miles per Station (000)	Cost per Revenue Ton-Mile[1] Carrier	Group Average	Ratio of Group to Big Four	Group Service Rate	Mail Ton-Miles (000)	Service Mail Pay (000)	Subsidy (000)	Mail Revenue (000)	Nonmail Revenue (000)	Total Revenue (000)	Subsidy % of Total Revenue
American	4,058	31.20¢	.....	.....	....	12,489	$ 5,620	$ 1,020	$ 6,640	$130,678	$137,318	0.74
Eastern	2,085	36.20	.....	.....	....	5,410	2,435	467	2,902	84,232	87,134	0.54
TWA	3,388	37.01	.....	.....	....	10,717	4,823	901	5,724	80,542	86,266	1.04
United	2,914	32.37	34.20¢	100.00%	$0.45	14,648	6,592	1,253	7,845	95,376	103,221	1.21
Total Group I						43,264	$19,470	$ 3,641	$23,111	$390,828	$413,939	0.88
Group II												
Braniff	975	39.59	.....	.....	....	1,476	$ 782	$ 956	$ 1,738	$ 14,888	$ 16,626	5.75
Capital	1,198	40.58	.....	.....	....	1,778	942	1,610	2,552	30,462	33,014	4.88
Chicago & Southern	723	46.28	.....	.....	....	646	342	1,036	1,378	8,790	10,168	10.19
Delta	1,246	36.91	.....	.....	....	1,509	800	507	1,307	20,461	21,768	2.33
National	1,308	33.35	.....	.....	....	837	444	1,269	1,713	20,054	21,767	5.83
Northwest	1,761	48.05	.....	.....	....	2,351	1,246	3,558	4,804	27,894	32,698	10.88
Western	929	35.62	40.05	117.10	0.53	1,128	598	340	938	11,251	12,189	2.79
Total Group II						9,725	$ 5,154	$ 9,276	$14,430	$133,800	$148,230	6.26
Group III												
Colonial	305	63.24	.....	.....	....	104	$ 78	$ 1,139	$ 1,217	$ 3,471	$ 4,688	24.30
Continental	288	54.54	.....	.....	....	254	191	1,236	1,427	5,331	6,758	18.29
Inland	235	54.49	.....	.....	....	185	139	559	698	2,554	3,252	17.19
Mid-Continent[2]	383	52.98	.....	.....	....	394	296	1,496	1,792	7,133	8,925	16.76
Northeast	295	60.53	57.16	167.13	0.75	138	104	1,496	1,600	5,345	6,945	21.54
Total Group III						1,075	$ 808	$ 5,926	$ 6,734	$ 23,834	$ 30,568	19.39
Group IV												
Piedmont	161	66.72	.....	.....	....	59	$ 54	$ 1,160	$ 1,214	$ 2,121	$ 3,335	34.78
Pioneer	189	61.37	.....	.....	....	103	94	1,064	1,158	2,203	3,361	31.66
Robinson	147	88.79	.....	.....	....	26	24	524	548	790	1,338	39.16
Southwest	109	61.21	69.52	203.27	0.91	52	47	782	829	1,481	2,310	33.85
Total Group IV						240	$ 219	$ 3,530	$ 3,749	$ 6,595	$ 10,344	34.13
Group V												
All American	82	99.62	.....	.....	....	49	$ 73	$ 1,784	$ 1,857	$ 1,660	$ 3,517	50.73
Bonanza	81	126.17	.....	.....	....	6	9	562	571	337	908	61.89
Empire	58	94.68	.....	.....	....	24	36	573	609	421	1,030	55.63
Frontier	63	126.48	.....	.....	....	104	154	2,292	2,446	1,290	3,736	61.35
Trans-Texas	67	109.11	.....	.....	....	51	75	1,584	1,659	842	2,501	63.33
West Coast	73	90.06	.....	.....	....	9	13	652	665	641	1,306	49.92
Wisconsin-Central	52	140.96	112.44	328.77	1.48	48	71	1,194	1,265	615	1,880	63.51
Total Group V						291	$ 431	$ 8,641	$ 9,072	$ 5,806	$ 14,878	58.08
Group VI												
Lake Central	37	[3]	.....	.....	....	11	$ 28	$ 453	$ 481	$ 206	$ 687	65.94
Ozark	24	255.84	.....	.....	....	12	31	758	789	213	1,002	75.65
Southern	47	136.01	195.93	572.89	2.58	73	188	1,087	1,275	651	1,926	56.44
Total Group VI						96	$ 247	$ 2,298	$ 2,545	$ 1,070	$ 3,615	63.57
Group VII												
Central	12	368.33	.....	.....	....	19	$ 138	$ 642	$ 780	$ 192	$ 972	66.05
Mid-West	3	535.35	.....	.....	....	13	94	380	474	36	510	74.51
Wiggins	2	752.16	551.95	1,613.89	7.26	2	15	231	246	26	272	84.93
Total Group VII						34	$ 247	$ 1,253	$ 1,500	$ 254	$ 1,754	71.44
Total—excluding Helicopters						54,725	$26,576	$34,565	$61,141	$562,187	$623,328	5.55
Helicopter Group												
Helicopter Air Service	x	x	.....	.....	15.78	23	$ 363	.....	$ 363	.....	$ 363	....
Los Angeles Airways	x	x	.....	.....	8.96	48	430	.....	430	.....	430	....
Total Helicopter Group						71	$ 793	.....	$ 793	.....	$ 793	....
Total—including Helicopters						54,796	$27,369	$34,565	$61,934	$562,187	$624,121	5.54

[1] Excluding passenger costs.
[2] Includes Route 106 operations.
[3] Nonscheduled operations involved, not used in computing average.

VOR Gaining Edge Over British Decca

USAF use of omni-range receivers in European-based planes may be decisive, despite currency handicap.

RECENT order of 17,000 airborne omni-range receivers by the U. S. Air Force for use in European-based aircraft shows promise of giving the final impetus required to entrench VOR as the standard navigation unit throughout Europe.

Informed observers feel that USAF's new stake in the provision of ample ground facilities to blanket important areas of Europe may prove decisive in the long-standing battle between the U. S. VOR and British Decca systems.

Principal obstacle standing in the way of standarization on VOR equipment has been the currency situation. European countries have found it difficult, if not impossible, to get dollars with which to purchase the U. S. built navigation equipment. Nevertheless, substantial progress has been made with the present line-up looking like this:

- **Effective:** Installed are 6 VOR stations in France, 6 in Italy, 8 in West Germany and 2 stations in Britain. The British stations were loaned to that country by the U. S.
- **Assured:** Portugal, Switzerland, Belgium and Sweden all want VOR and have the money to buy the equipment in Europe.
- **Problems:** Norway, Denmark, Netherlands and Ireland all want VOR but haven't the dollars or other currency.
- **Others:** Spain is a separate problem because it is not in NATO or under ECA.

But Westinghouse Electric Export Corp. (see box) has recently completed a comprehensive study and recommendation, and Spain will get VOR in due course. Turkey and Greece are being taken care of through military grants.

Britain Wants Decca

Britain is the one hold-out against standardization on VOR and is still fighting on government levels for its Decca system which is successful for marine work but deficient for aircraft navigation. Virtually all European airlines have indicated definite preference for VOR.

In the front of the strong U. S. efforts to have VOR accepted as standard in Europe (over the British Decca system) are Rolland Sturtevant, CAA Coordinator based in London, and John Humpstone, of the industrial division of ECA in Paris. Humpstone is former European sales director for the Glenn L. Martin Company. Sturtevant has done an outstanding job of demonstrating the superiority of VOR over Decca with the CAA DC-3 N-17, based in London. The N-17 is fully equipped as a demonstration plane and most of the key airline and aviation officials in Europe have flown it.

The present snarl over currency is composed of two factors.

The first is what is known as off-shore procurement—where ECA permits European countries to use their ECA dollars to purchase outside Europe. The Lorenz Company of Berlin, which is said to have invented VOR before the last war and which is now in production on station units, could supply the equipment but so far ECA at top level has refused to permit ECA dollars for off-shore procurement of VOR. The Feranti Company of Edinburgh, Scotland, is also about to start manufacturing distance measuring equipment, a valuable supplement to VOR.

The second is purchase of VOR stations in the U. S. with ECA dollars, but here the problem is that all countries have programmed their dollar requirements and want to use their dollars for something else besides VOR. By a strong sales approach some countries may be persuaded to allocate some of their dollars to VOR but this is an uphill job considering other industrial needs.

If VOR can be established as the standard system of navigation for Europe, air navigation will be far advanced. It seems certain that VOR is winning against Decca but the currency problem must be solved first.

The U. S. is, in fact, financing almost the whole program, but standardization is of tremendous benefit for both military and commercial aviation. In its attempt to fully utilize VOR equipment already ordered for airborne use in this area the USAF may well influence the decision of top authorities needed to iron out currency and related problems and get more ground equipment for Europe.

Westinghouse Provides Landing, Navigation Aids in Europe

Westinghouse Electric International Co. of New York City, which provides sales representation for the electronic aviation equipment of Maryland Electronic Manufacturing Corp. of College Park, Md., in the international field, is typical of U. S. companies working with foreign countries in their attempt to provide U. S.-built navigation and landing aid equipment.

Westinghouse has concluded firm contracts with the following countries for equipment as indicated:

Turkey
- Dual Instrument Landing System Equipments
- Dual Simultaneous Radio Range Equipment
- Fan Marker Antenna and Counterpoise Equipment
- Dual Z Marker Transmitting Equipment
- Dual Fan Marker Transmitting Equipment

Great Britain
- Dual Simultaneous Radio Range Equipment
- Dual Fan Marker Transmitting Equipment
- Dual Z Marker Equipment

Italy
- Dual Instrument Landing System Equipment

France
- Dual VHF (VOR) Omnidirectional Radio Range Equipment

India
- Dual Instrument Landing System Equipment

Pakistan
- Dual Instrument Landing System Equipment

Iceland
- Dual Simultaneous Radio Range Equipment

NEGOTIATIONS PENDING

Spain
- Dual VHF (VOR) Omnidirectional Radio Range Equipment
- Dual Instrument Landing System Equipment
- Dual Simultaneous Radio Range Equipment
- Dual Fan Marker Transmitting Equipment
- Fan Marker Antenna and Counterpoise Equipment
- Dual Z Marker Transmitting Equipment
- High Frequency Communications Equipment. Four Types
- Control Towers. Three Types
- Air Traffic Control Center Equipment
- VHF Direction Finder Equipment
- Ground Controlled Approach

New Zealand
- Dual VHF (VOR) Omnidirectional Radio Range Equipment

Brazil
- Dual Instrument Landing System Equipment

Chile
- Dual Instrument Landing System Equipment

Burma
- Dual Instrument Landing System Equipment

Ethiopia
- Dual VHF (VOR) Omnidirectional Radio Range Equipment

1951 Lightplane Sales Continue to Drop

But trend toward larger planes boosts delivery value for year's first eight months.

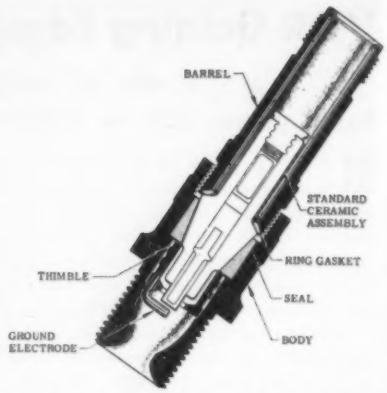
Shipments of one- to ten-place personal and executive aircraft for the first eight months of 1951 decreased 594 units from the same period for last year, although the value of 1951 deliveries exceeded that of 1950 by $805,000. According to figures furnished by the Aircraft Industries Association, 1,783 lightplanes were shipped in the January-August period of 1951, while 2,377 were shipped in the same period of last year. Value of the 1951 shipments: $13,305,000. Value of the 1950 shipments: $12,505,000.

Increase in cost of the 1951 airplanes is accounted for by the higher proportionate number of four- and five-place planes delivered this year.

Since personal aircraft manufacturers were not given CMP allocations early in the year, materials scarcity is being felt, and lags in deliveries will probably continue to make the picture worse before it begins to improve. Upswing in lightplane deliveries is not expected until around the first of the year. Detailed figures follow:

	Shipments		Value	
	1st 8 mos. 1951	1st 8 mos. 1950	1st 8 mos. 1951	1st 8 mos. 1950
			(000 omitted)	
Aeronca				
Champion 85hp	..	22		
Champion 90hp	12	53		
Superchief	..	8	$101	$293
Sedan	20	37		
7CCM[2]	2	6		
Beech				
Bonanza	259	[4]305		
Twin Bonanza	2	..		
D-18	39	15	6,017	3,923
3N[1]	5	..		
Bellanca				
Cruisair	..	4		
Cruisemaster	11	36	106	300
Call Air				
Call Air	1	6	4	30
Cessna				
140A	38	224		
170A	313	393		
190	16	30	2,691	3,387
195	53	70		
Eng. & Res.				
G	7	13	24	42
Luscombe				
GC-1B	[3]12	..		
8-F	25	9	[3]117	26
Mooney				
M-18	17	33	31	49
Piper				
Family Cruiser	1	..		
Cub Special	..	3		
Tandem Trainer	355	312		
Pacer	480	490	2,976	2,524
Clipper	1	11		
Vagabond	..	1		
Stinson	..	73		
Ryan				
Navion	..	176	..	1,786
Taylorcraft				
Sportsman	10	17	23	36
Texas Engineering				
Swift	..	16	..	74
T-35[2]	..	1	..	..
Totals	[1]1,783	[4]2,377	[3]$13,305	[4]$12,505

[1] *Military aircraft sold to other than U. S. military customer.*
[2] *Includes 7 GC-1B's valued at $27,000 shipped by Texas Engineering.*
[3] *Includes 104 Navions valued at $1,215,000 shipped by Ryan.*
[4] *Includes shipments of 13 Emigh-Trojans valued at $35,000.*



NEW BOEING ANTI-FOULING spark plug, now being tested at Pratt & Whitney in the R-4360 engine, is shown in cross-sectional view. In tests conducted by Standard Oil Company on a single cylinder (R-2800) engine the Boeing plug ran 70 hours as compared with a maximum of 22 hours for the best plug tested. The Boeing plug, which isn't on the market, features electrodes recessed into the body.

NWA Pilot Blamed for Missing Snowy Runway

"FAILURE of the pilot to identify properly and align the aircraft with the assigned runway, due to snow coverage and poor visibility" was cited by the CAB as probable cause of a Northwest Airlines accident March 18, 1951.

The pilot landed the aircraft, a Douglas DC-4, in deep snow to the right of the runway at the Minneapolis-St. Paul International Airport. Although the aircraft was substantially damaged, there were no injuries to the 13 passengers and one infant or to the four crew members.

The airport at the time of the accident was described as a sea of snow, unbroken and without contrasting features. The pilot, Captain T. Franklin, reported that he made contact with the field at 2,100 feet shortly after arrival over the middle marker. He said, however, that he could not distinguish the runway from the whole airport area because of the snow condition.

Captain Franklin elected to abandon ILS approach and to continue his letdown visually, since by this time the plane was aligned with the runway. CAB found that he probably lost sight of landmarks and the approach light structure and lost alignment in the descent.

In view of the adverse weather conditions and the fact that the plane was not properly aligned with the runway, the CAB says the pilot showed poor judgment in failing to execute a missed-approach procedure.

Reworked FIDO Staging Comeback at Los Angeles

FIDO, which was beginning to degenerate into a lost cause, is making a strong comeback at the Los Angeles International Airport.

After all the discouragement of the last three years, fog dispersal may yet become the insuring link in bringing air operations close to the point where zero-zero conditions exist.

Reason for the renewed optimism is the success the contractors and the airport engineers, working in close conjunction with the CAA's 6th Region have had in ironing out the mechanical bugs which have harassed them from the start.

Following weeks of exploratory tests, a full set of modifications was incorporated in one of the system's four lines for final inspection tests. In 50 burnings at varying degrees of pressure, the 137 burners (274 valves) functioned sufficiently well in a 12 mph crosswind for the engineers to decide that at last they had the operating problem licked.

Next step will be to incorporate the new valve seats, new valve followers and other modifications in the complete system, after which it will be ready to turn over to the airlines for functional tests.

When first installed on an experimental basis at Los Angeles, FIDO was just one large-size disappointment. The system sputtered and faltered at ignition; it sputtered and sizzled when it was shut off; it leaked and it smoked.

FIDO hit a low ebb on the first flight test. A Western Air Lines DC-4 carrying supervisory flight personnel and other representatives from all the airlines couldn't get back into the Los Angeles field and had to land at Lockheed Air Terminal in Burbank.

After this experience, FIDO became as shaky financially as it was operationally. It had cost $840,396.29 to install. The CAA paid $444,685.54 as its share. The city of Los Angeles had paid $395,710.25. An engineering committee then recommended the installation of supplemental lines. This brought FIDO's total cost to $1,140,644.29.

This installation of check valves, the first to be used with FIDO, was necessary for fire as well as smoke protection. The field is surrounded by densely populated communities—and airport traffic is such that it cannot tolerate excessive fuel leakage.

The engineers, however, feel that their new modifications will be successful. The Los Angeles airport staff, according to Tommy Tucker, chief engineer, won't be satisfied with anything less than zero-zero.

. . . Not Necessarily So! Especially if the engine is equipped with a dependable GLA ignition system. The Model ACD2-6 *high energy condenser discharge system*—specified for many of the latest air force aircraft—is typical of the many complete systems built by GLA. Their performance is uniform under varying conditions of operating environments.

We specialize in equipment which combines advanced electronic development with unique space and weight-saving design. Solving complex ignition problems and producing the equipment is our business—our Engineering Department invites your inquiry. May we hear from you?

GENERAL LABORATORY ASSOCIATES INC.

NORWICH, NEW YORK

GLA

AIRCRAFT AND ELECTRONIC PRODUCTS

Operators Offer 7 Ways to Improve C-46

New council opposes CAB proposal to reduce gross operating weight of aircraft.

THE Council for C-46 Engineering, action committee of C-46 owners and operators organized to combat the proposed special Civil Air Regulation restricting gross operating weights of C-46's, has advanced a seven-point program to improve C-46 performance without reducing operating weights.

The Council representing owners of 70 C-46's, says the program if adopted will keep C-46's in profitable public use. The seven points are:

- **Increase engine power** by water injection.
- **Increase engine power** by extension of type testing to maximum conditions.
- **Automatic engine feathering** on take-off engine failure.
- **Propeller change or modification.**
- **Wing flap modification.**
- **Dump valves** to jettison fuel.
- **Other changes** to be arrived at through analysis of C-46 accident reports.

Organizing committee of the Council are Robert W. Prescott, president of The Flying Tiger Line; Amos E. Heacock, president of Air Transport Associates; and John Balding, president of Continental Charters, Inc.

The Council is legally represented by Albert F. Beitel, who, in another case, obtained an injunction in District Court against CAB's regulation numerically limiting the number of flights of irregular air carriers.

In a comment submitted to the CAB prior to convening of the public hearing scheduled for last week to air facts on C-46 operating weights, the Council stated that the reduction in take-off weights proposed by CAB "would lower the payload by 35% and would eliminate the C-46 as a low-cost plane." The Council says that it is "opposed to any rule which would be economically ruinous to C-46 operators and would deprive the public of their use."

Cargo Mainstay

Heart of the matter for Council members is the fact that the C-46 has become the mainstay of the cargo carriers and irregular airlines. Fifty per cent of the entire non-scheduled fleet consists of C-46's. Of the 134 C-46's now flying, 82 are operated by irregular carriers, 52 are in cargo service, and 9 are carrying cargo overseas for a scheduled line.

In a letter to the CAB attesting to the safe operation of C-46's, Riddle Aviation Co. stated that its C-46's with gross weights of 48,000 pounds (present maximum allowable weight) have safely made 150 take-offs and landings since February, 1950. The Riddle letter points out that the Air Force approves weights up to 55,000 pounds for its C-46's.

Is Ruling Necessary?

No adequate showing has been made that the proposed ruling on C-46's is necessary, according to the Council. During 1950, C-46's flew more than a hundred million revenue passenger-miles without fatalities to passengers or crews.

Efficiency of the C-46 as a useful air carrier is amply demonstrated in the accompanying table detailing Slick Airways' C-46 operation for one month of three successive years.

CAB investigation of the C-46 came about as a result of "several accidents in which performance seemed to be a factor." Although no specific accidents are cited, one of them is probably the take-off crash of a Flying Tiger C-46 near Stapleton Air Field, Denver, early last year, in which the plane mushed in from 100 feet after being pulled off the ground at the end of the runway.

The CAB named "subnormal take-off performance of the aircraft" as probable cause and noted that the plane was loaded higher than maximum allowable weight. But this accident and the fact that many pilots consider the C-46 an underpowered airplane were probably instrumental in raising official questions concerning C-46 safe operating weights. The Council for C-46 Engineering has pointed out that there has never been a C-46 accident attributable to take-off with a gross weight of 48,000 pounds.

When C-46's became available for civil use as surplus war property in 1947, tests showed that the airplane could not meet the requirements of a regular scheduled transport at high enough weights to allow profitable operation. Placed in the nontransport category, the catch-all group including all airplanes except those in the transport category and military aircraft, surplus C-46's were purchased in large quantities by the irregular carriers, whose aircraft do not require transport category certification.

5 Certificates Issued

Between February, 1946 and September, 1949, the CAA issued five different type certificates in the nontransport category to Slick Airways, Curtiss Wright Corp., the United Services for Air, Skyways International Trading and Transport Company, and Pan American World Airways. Depending upon performance resulting from modifications for which the certificates were issued, CAB permitted maximum weights varying between 42,500 and 48,000 pounds gross weights.

Recent tests conducted by CAA to

A Typical C-46 Operation

Slick Airways

	April, 1949	April, 1950	April, 1951
Avg. Number of Aircraft	20.2	19	21
Utilization, (Wheel to Wheel) *(Hrs.)*	4.7	5.7	8.4
Load Factor	70.9	67.3	85.7
Direct Operating Cost: *(¢/mi.)*			
Flying Opns.	26.33	27.82	26.86
Direct Maintenance	5.31	6.07	7.68
Depreciation	1.92	1.56	1.13
Total	33.56	35.45	35.67
Authorized Engine Hours between Overhauls *(Hrs.)*	1000	1000	1000
Avg. Block Speed *(mph)*	179	176.5	171.7
Avg. Trip Length *(mi.)*	NA	482.4	446.92
Fuel Consumption *(Gal./Block Hr.)*	NA	147.4	149.3
Landings per Month	NA	1285	2178
Total Miles Flown	567,728	620,696	973,548
Ton-Miles Flown	2,053,768	2,399,658	4,827,469
Avg. Weight of Common Carrier Shipments *(pounds)*	292	303	335

NA—Not Available

re-evaluate the C-46 were run in accordance with transport category requirements. According to the CAA, the C-46, operating with weights between 42,500 and 48,000 pounds, flunked its tests. At 48,000 pounds, CAA reports, take-off performance is insufficient for the airplane to continue flight if one of the engines should fail during the critical take-off phase, and that at that weight the airplane will not meet the single-engine enroute performance standards required.

At 45,800 pounds, CAA tests show, the plane still fails to meet requirements, which are not fully complied with until gross weight is dropped below 40,000 pounds.

CAA says that its recent transport category tests were conducted with extreme care. Extensive instrumentation was used and stall data were recorded by a photorecorder, including exact time of stall as reported by the pilot. For each stall, plots of speed vs. time were made for 10 seconds before the stall. From these curves, rate of approach to the stall and actual stall speed were accurately determined.

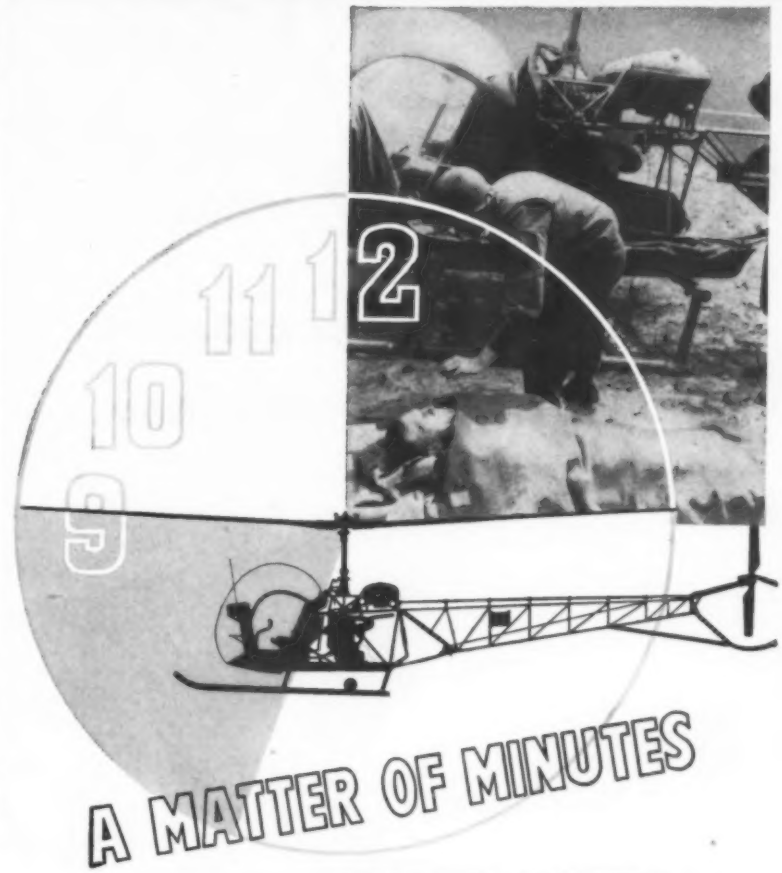
Previous Tests

In the earlier, 48,000-pound tests, stall data were recorded by eye from an airspeed indicator. CAA concludes that newer techniques permitting greater accuracy of recording and analyzing methods indicate superior reliability of the more recent tests.

Upon the basis of its findings, CAB proposes a Special CAR becoming effective Oct. 1, 1951, which requires the following:

* **All commercial C-46's must be reweighed** under supervision of CAA before Aug. 1, 1951.
* **Maximum weight will be limited** to an amount stipulated by requirements for nontransport category aircraft. (Type of modification incorporated in individual planes will be a factor in determining this weight.) But in no case will maximum weight be greater than 45,000 pounds for models equipped with P&W R-2800 series engines.
* **After October 1, 1952,** in no case will maximum weight be greater than 43,-000 pounds for models equipped with P&W R-2800 series engines.
* **Maximum weight of cargo-carrying** C-46's is limited to weights now permitted, except that airplanes equipped with other than the P&W R-2800 series engines must be retested in accordance with nontransport category requirements.

Prior to the convening of the hearing, the Air Line Pilots Association petitioned the CAB to broaden the scope of the issues involved to the extent of considering whether the inter-



A MATTER OF MINUTES

... BY HELICOPTER

In Korea, battle wounded often reach a hospital faster than a traffic accident victim in metropolitan cities.

Combat records show that combat casualties have been evacuated by helicopter to a batallion or regimental hospital within 20 minutes after being wounded. This remarkable "ambulance" service is the contribution of helicopters such as the H-13D and the HTL-4, built by Bell Aircraft for the Army, Navy and Marines.

These maneuverable Bell helicopters are officially credited with saving the lives of 3,000 wounded U. N. troops in 6 months.

The majority were wounded so critically that evacuation by any other means could have been fatal.

While these helicopters have done almost the unbelievable...they are not robots. They need men to fly them. Army and Marine pilots continuously operated their helicopters dangerously close to enemy fire, repeatedly risking their own lives to help save the lives of others.

Bell Aircraft invites the application of qualified helicopter engineers.

BELL Aircraft CORPORATION

Fourteen years ago . . . in our first year of publication . . .

ran its first advertisement in American Aviation Magazine. We've both come a long way since then, and today The BG Corporation continues its advertising messages in American Aviation on a consistant schedule. We're proud of this experience-proven confidence.

The most important companies in aviation, who know and have grown with this great industry, advertise consistently in the most important magazine in aviation . . .

Integrity

Influence

est of safety requires reduction of maximum take-off weights not only for the transport of passengers (on irregular carriers) but also on cargo flights.

The Board denied the petition as being likely to cause delay, but stated that another proceeding may be instituted to investigate the ALPA request.

It is interesting to speculate on the Board's apparent persistence in regarding the reduction of maximum C-46 operating weight as the sole cure for the airplane's ills. It is altogether possible that the proposals of the Council for C-46 Engineering could bring the plane up to requirements without endangering continued existence of some non-scheduled air carriers, which might well be forced out of business by the proposed CAR. Seriousness of the situation is indicated by the fact that in order to change the existing weights, the Board is willing to admit that its earlier tests were probably inaccurate.

Non-scheduled carriers, in common with all groups engaged in flying, are vitally interested in safety, for one reason, because high safety records mean better business. The non-scheduled lines are not, of course, in any way responsible for the fact that the C-46 is placed by the CAA in a performance category so broad as to be almost meaningless, so that it is tested on the basis of the same requirements as those for lightplanes or four-place charter planes. Now that the C-46 has been re-evaluated, it seems reasonable that there must be some way to maintain a useful airplane in profitable service.

Military Personnel

Lloyd

Christian

Lt. Cdr. Frederic M. Lloyd III has become new public relations officer for the Navy Bureau of Aeronautics. He replaced **Lt. Cdr. William Bryson,** who has been transferred to NAS San Diego, Calif.

Brig. Gen. Aubry L. Moore, USAF, will replace **Brig. Gen. Edward H. White** as commander of Military Air Transport Service's 1503rd Air Transport Wing at Hanada Air Base, Tokyo, in mid-September. General White has been reassigned as Chief, Combined Army-Air Force Exchange Service, New York City.

Commander Joseph O. Christian, Navy Bureau of Aeronautics representative at McDonnell Aircraft Corp., has been promoted to Captain.

UP THERE WITH THE BIG NAMES . . . CHAPTER NUMBER 7

SKYDROL plies American skies with the Flagship Fleet of AA

High in the skies over the United States, Canada and Mexico, passengers and crews travel in greater safety via the Flagship Fleet of American Airlines because Monsanto Skydrol is used in cabin superchargers.

Skydrol, Monsanto's fire-resistant-type hydraulic fluid, now serves every domestic airline flying DC-6's. Many planes carry Skydrol throughout the hydraulic systems as well as in the superchargers.

Skydrol brings greater safety to passengers, crews and planes in the air and on the ground. In addition, Skydrol means greater economy because its high lubricity reduces wear on working parts of hydraulic systems.

Investigate the safety and economy possibilities Skydrol offers you. For details and a copy of the booklet, "*More Safety in the Air with Monsanto's Skydrol*" write MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri.

Monsanto Skydrol Offers These Advantages

SKYDROL is fire-resistant—exceeds the nonflammability requirements of Aeronautical Material Specification 3150.

SKYDROL is a proved superior lubricant. In most critical cases, lubricity is more than double that of other hydraulic fluids.

SKYDROL is stable at required operating temperatures and pressures.

SKYDROL is noncorrosive to aircraft metals and alloys.

SKYDROL is nontoxic—does not require special handling or protective clothing.

Skydrol: Reg. U. S. Pat. Off.

MONSANTO
CHEMICALS AND PLASTICS

SERVING INDUSTRY . . . WHICH SERVES MANKIND

Between the Lines

By James J. Haggerty, Jr.

Level Flight at 1,000 mph Isn't Easy

IN CASE you have picked up the impression, from reading daily press reports, that there is nothing much to supersonic flight but applying full throttle and sitting back with an eye on the instrument panel, Bill Bridgeman, the Douglas Aircraft Co. test pilot who has flown faster and higher than any other human in the D-558-II Skyrocket, can quickly set you straight.

We sat in on a recent discussion of supersonic flight by Bridgeman, made before a Washington meeting of the Institute of the Aeronautical Sciences, and from what we can gather, it was a rare moment indeed when Bridgeman got the wings of the Skyrocket level.

The entire supersonic program in the D-558-II, Bridgeman said, was characterized by violent lateral oscillation, or wing roll. At times this oscillation became so violent that the wings dipped as much as 75 degrees and the rate of roll was as much as 86 degrees. In other words, the plane was rolling through almost one quarter of a complete cycle every second and Bridgeman had about one half second to catch a wing dropping to one side and bring it back with the aileron, and every time he did, it would roll off on the other side. The most violent roll occurred at close to the highest speed attained in the D-558-II program.

The official top speed of the Skyrocket has never been released, but best information is that it was in the neighborhood of 1,200 miles per hour. Thus, this violent rolling occurred at well over 1,000 miles per hour. With classic understatement, Bridgeman said that the rolling caused "some apprehension," adding that it was a "somewhat unsuitable" way to fly the aircraft.

Rudder Locked

The rolling was curbed somewhat by the expedient of locking the rudder in neutral position before take-off, with provisions for a pilot override mechanism which would permit Bridgeman to unlock it after the speed run for landing. But even with the rudder locked the oscillation continued throughout the test program.

Bridgeman had these other comments to make about the program:

The D-558-II, currently the world's fastest airplane, is already obsolete, because its controls are inadequate for a test program of the sort he ran.

At times he had the plane in a complete vertical bank at the completion of a speed run but it would not turn one degree at that speed.

He was forced to hold the maximum permissible angle of attack during climb to altitude, in order to hold the climb speed to the specified Mach .85 (about 600 miles per hour).

How Careful Can You Get?

THIS one we just can't resist, as a beautiful example of the military mind at work.

Last month some one in the USAF's Air University decided he needed a booklet printed by the Chamber of Commerce, which was selling for fifty cents. Naturally, the idea of writing a personal check was unthinkable—out of channels, you know. So the character put through an official purchase order—mimeographed, not typed. The order was officially numbered (01-600) 52-2274, based on requisition number LB 52-107. The fifty cents was payable from allotment number 5723400 26-1443 P-443-09 S01-605. The shipment was to be designated AF 1799 LO (01-600) 52-2274.

Included with the order was a very formal contract, consisting of 20 fine print clauses, including nondiscrimination in employment, patent infringements, assignment of claims and the eight-hour law of 1912.

There was also a four-page set of "additional general provisions" dealing with such items as contract termination, patent indemnity, notice to the government of labor disputes, and (so help us) "the loading, bracing and blocking of freight cars."

In addition, there was a stipulation that the Air Force could vary the quantity ordered (one fifty-cent booklet, mind you) 10 per cent either way. This, no doubt, was out of fine regard for the taxpayers' money.

The Chamber of Commerce, with a wry humor we never suspected of so august a body, clucked dryly: "The Air Force need have no fear. It will get one booklet, neither 10 per cent more nor 10 per cent less. In fact, the booklet, properly loaded, blocked and braced on a freight car, is now on its way." The C of C also waived the fifty cents.

Care to guess the title of the booklet? "Economic Policies for National Defense."

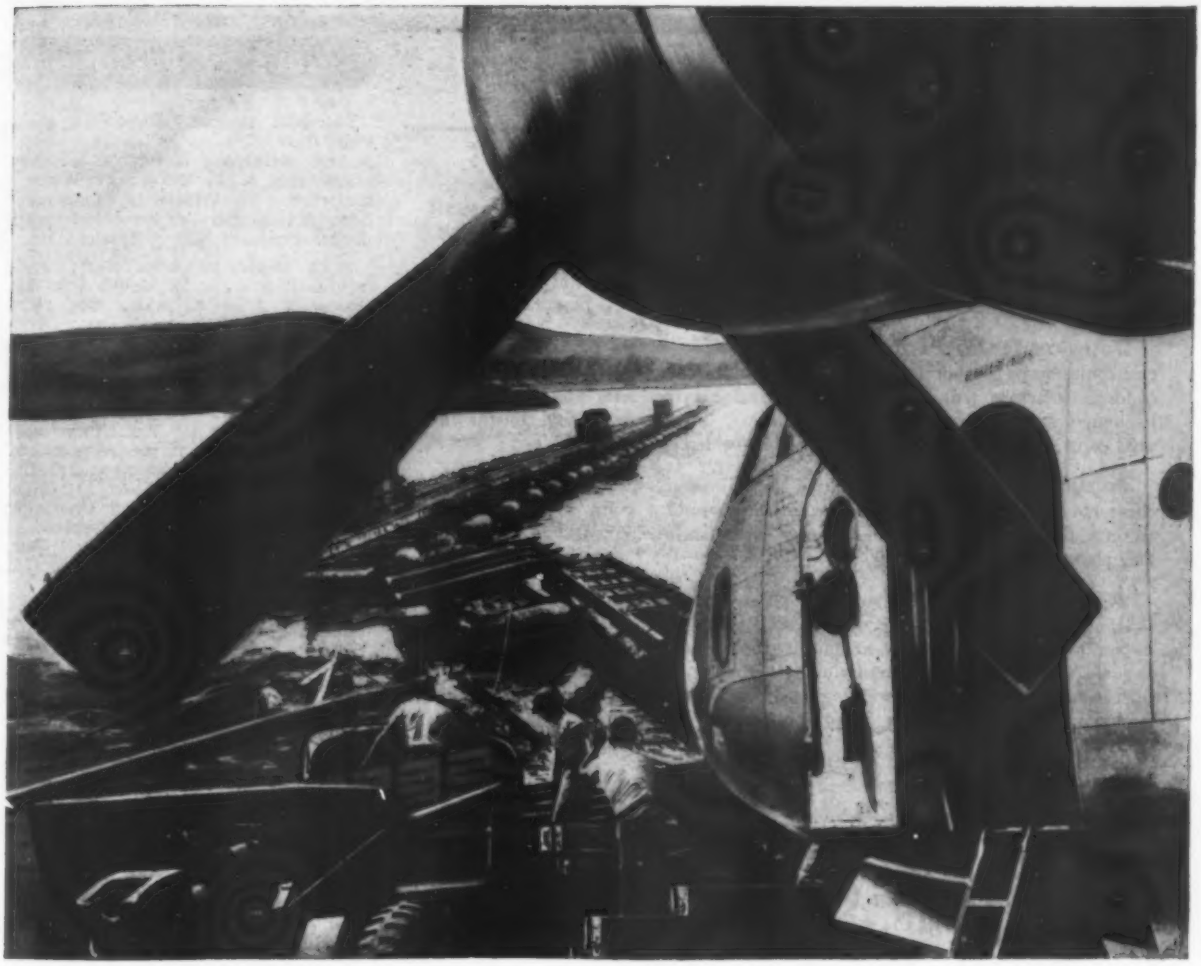
No Flying Saucers — This Time

THE recent comments from top level Administration officials to the effect that we now possess a number of "fantastic, new weapons" have revived an old rumor. These weapons, we have been informed by a couple of 'inside sources" speaking from behind a cupped hand, are flying saucers.

The Air Force's Project Saucer, wherein the USAF spent a lot of time and money investigating innumerable saucer reports, born either of imagination, hallucination or mistaken identity, was actually a huge hoax perpetrated upon the taxpayers by an overly secretive Air Force, these saucer experts claim.

Rather wearily, we checked again with the Air Force, both officially and unofficially. Officially, the USAF says it is standing upon its previous statements: there are no flying saucer projects on hand or contemplated either in the Air Force or the Navy. Unofficially, we have re-satisfied ourselves that the official statement is still true.

Actually, the "fantastic" tag on the new weapons under discussion is something of a misnomer. One of them, for instance, is the Martin Matador, a subsonic pilotless missile with a guidance system that still leaves something to be desired. It may prove to be a very effective weapon for short range, anti-troop work, but it is far from fantastic. Except for an improved guidance system, it approximates in development status the 1939 German V-1. There are some more interesting developments in the atomic weapon field, but none that fit the tag line. Interesting, yes; important, undoubtedly. But fantastic—no.



The Bridge That Flew To Korea . . . *Overnight!*

All bridges across the Han River had been destroyed by retreating North Korean Communist armies, holding up the United Nations advance. We needed to bridge the Han in a hurry.

Back in Japan, U. N. troops prepared a 256-ton, 600-foot pontoon bridge—in sections—to fit into the U.S.A.F. Combat Cargo Command's Fairchild C-119's. Piece by piece, plane by plane, they flew the bridge to Korea overnight!

Here again, Fairchild C-119's displayed unique versatility—under rigid military conditions. Battle-tested, tough and rugged "Flying Boxcars" are airlifting everything for the Army, Air Force and Marine Corps—personnel, trucks, ammunition, hospital equipment—even BRIDGES! It is the backbone of the airlift to Korea today.

ENGINE AND AIRPLANE CORPORATION

FAIRCHILD

Aircraft Division

HAGERSTOWN, MARYLAND

• Fairchild Engine Division, Guided Missiles Division and Stratos Division, Farmingdale, N. Y.

Production Spotlight

T-34 Subcontract to Allis-Chalmers: Allis-Chalmers Manufacturing Co. has been awarded a major subcontract by Pratt & Whitney Aircraft Division for work on P & W's 6,000-horsepower T-34 turboprop engines. Allis-Chalmers will perform about 90% of the manufacturing operations on T-34's for a number of military prototype aircraft and will assemble the engines for shipment to P & W's East Hartford, Conn., plant for testing.

Douglas Testing Lab: **Douglas Aircraft Co. will build a three-story electronics testing laboratory at its new Tulsa, Okla., plant. The reinforced concrete structure will be 80 feet wide and 221 feet long and will include its own service facilities for air conditioning, heating, humidity control and dust control. It is scheduled for completion by February 1, 1952.**

Republic and Kaiser: Kaiser Metal Products Co. has received a subcontract from Republic Aviation Corp. to produce complete fuselage aft sections for the F-84 jet fighter. Kaiser will handle the work at its Bristol, Pa., plant.

AiResearch as Distributor: **AiResearch Aviation Service Co., a division of The Garrett Corp. will make its entry into the aircraft sales field as Southern California and Arizona distributors for Aero Design & Engineering Co.'s five- to seven-place twin-engined Aero Commander. The division operates a maintenance, conversion and overhaul base at Los Angeles International Airport, specializing in executive-type aircraft.**

Boeing Modernizes: Boeing Airplane Co. has started modernization work on its wind tunnel and testing has been temporarily suspended. During the six months it will take to install new, more powerful equipment in the company tunnel, Boeing will use the University of Washington tunnel and other test facilities.

Tread for Added Tire Life: **Thompson Aircraft Tire Corp. has developed a new aircraft tire with a slotted tread designed to permit a greater average number of landings. The spacing of the slots has been engineered to carry heavy loads and yet provide the proper displacement of the tread rubber when the tire deflects on landing impact. The tire is now being service tested on various western airlines, using Douglas DC-3, DC-4 and DC-6 equipment. Thompson is manufacturing other tire sizes, including Convair-Liner sizes.**

Lockheed Readies New Plant: Lockheed Aircraft Corp. will produce assemblies for its Super Constellation at its new plant recently leased in Bakersfield, Calif. L-1049 sections to be built at the new plant include engine nacelles, a section of the aft fuselage, wing fillets and flaps, horizontal stabilizers, stabilizer tips and fins. The 48,000-square-foot building will be ready for operation about November 1. Initial employment will be 175 persons, but it will increase to about 300 by next May.

Expansion Plans Blocked: **Thompson Products, Inc.'s plan to lease the Butler, Pa., plant of American Bantam Car Co. for jet engine production has been temporarily blocked by stockholders of the latter corporation. The stockholders' representatives told a Federal judge that the proposed deal was a bankruptcy liquidation rather than a reorganization and added that another manufacturer had also offered to buy the plant. The court deferred until October 15 the date for setting a hearing on the reorganization.**

Grand Central Gets AF Overhaul Job: Grand Central Aircraft Co. has started work on a new Air Force contract for overhauling a large number of P & W R-1830 engines. GCAC's work force at the Glendale, Calif. engine shop, which now numbers 150, is scheduled for enlargement as the R-1830 contract approaches peak.

New Piper Distributors: **Piper Aircraft Corp. has appointed two new domestic distributors: Little Rock (Ark.) Aircraft Sales and Memphis (Tenn.) Aero Corp.**

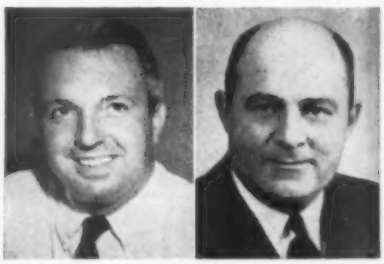
J. J. H.

INDUSTRY PERSONNEL

Fairchild Aircraft Division has chosen **Phil Harr** director of quality control, **J. Earl Steinhauer** director of plant operations and **S. T. Mulroney** director of materials . . . **William F. Palmer** has been picked controller for American Airmotive Corp. in Miami Springs, Fla.

W. A. Cooper has been selected superintendent of shops for Dallas Aero Service while **John R. Akins** was named engine division foreman and **T. H. Gooden** was picked aircraft division foreman . . . Kaman Aircraft Corp. has named **Seth R. Thompson** assistant to the president.

B. F. Goodrich Co. has chosen **Ralph T. Rabe** manager of the Atlanta office of its Automotive, Aviation and Government Sales Division . . . McCulloch Motors Corp. has selected **Chester M. Weaver** as plant manager of its recently purchased Rhodes-Lewis Co. in Los Angeles.



Keller Zaoral

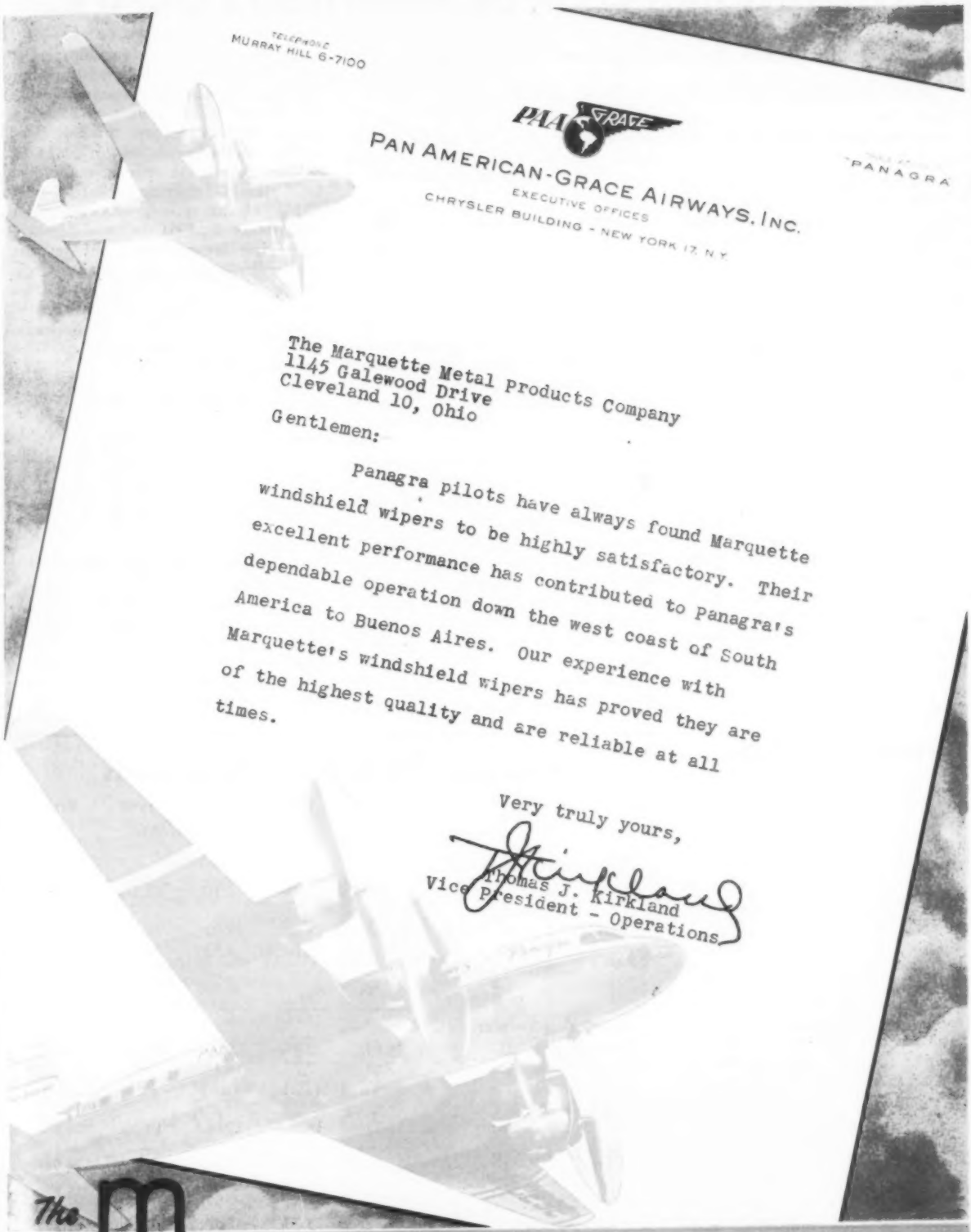
National Aeronautical Corp. has appointed **Gilbert F. Quinby** sales manager . . . **George T. Keller** has become contract coordinator for Southwest Airmotive Co. . . . Bendix Aviation Corp. has named **C. T. Zaoral** a director of its new Australian affiliate, Bendix-Technico Proprietary Ltd.

Pratt & Whitney Aircraft has named **Charles T. McKinnie** assistant sales manager in charge of all military and commercial sales . . . Fairchild Aircraft Division has chosen **Joseph H. Baylis** director of industrial relations at Hagerstown and **T. F. Riddle** assistant plant manager at Chicago.

Douglas Aircraft Co. has appointed **C. C. Walker** contract termination manager and **R. L. Johnson** chief engineer of the missiles design division . . . **Roger H. Davis** has been picked assistant comptroller for Fairchild Engine & Airplane Corp. . . . **Leslie R. Parkinson**, former head of Syracuse University's Aeronautical Engineering Department, has joined Wright Aeronautical Corp. as a staff engineer.

Lovell Lawrence, former president and recent acting chairman of the board of Reaction Motors, Inc., has resigned . . . Gyrodyne Corp. of America has hired **Donald W. Mac Vicar** as director of manufacturing.

Boeing Airplane Co. has appointed **Fred Huleen** industrial relations assistant, **H. S. Birrell** assistant labor relations manager **and John Dean** experimental plant engineer . . . Chance Vought Aircraft has named **Alden R. Sanborn** field service manager and **John W. McGuyrt** chief test pilot.



TELEPHONE
MURRAY HILL 6-7100

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EXECUTIVE OFFICES
CHRYSLER BUILDING - NEW YORK 17, N.Y.

PANAGRA

The Marquette Metal Products Company
1145 Galewood Drive
Cleveland 10, Ohio

Gentlemen:

Panagra pilots have always found Marquette windshield wipers to be highly satisfactory. Their excellent performance has contributed to Panagra's dependable operation down the west coast of South America to Buenos Aires. Our experience with Marquette's windshield wipers has proved they are of the highest quality and are reliable at all times.

Very truly yours,

Thomas J. Kirkland
Vice President - Operations

The Marquette
METAL PRODUCTS CO.
CLEVELAND 10, OHIO
SUBSIDIARY OF CURTISS-WRIGHT CORPORATION

Also Manufacturers of:
ROLLER BEARING TEXTILE SPINDLES
HYDRAULIC GOVERNORS
FUEL OIL PUMPS AND INJECTORS
PRECISION PARTS AND ASSEMBLIES

An Operational Look at American's DC-6's

Present fleet's half-million-hour performance was big factor in recent order for 30 more planes.

By WILLIAM D. PERREAULT

BETWEEN Oklahoma City and Tulsa the Douglas DC-6, flying American Airlines' Flight Two from Los Angeles to New York, developed engine trouble. At Tulsa the ground crew determined that the engine had to be changed. The plane was taxied from the Tulsa terminal to American's huge overhaul base adjoining the airport. Everything was in readiness. Within an hour the engine change was complete. Some of the passengers hadn't left their seats; meals were served on board during the engine change.

Naturally, this isn't standard procedure with engine changes on the Douglas DC-6, but the fact that such a quick change would be attempted with a load of passengers "superintending" the job is typical of the things American has come to expect of the plane which carries about 65% of its revenue passenger traffic. It is the type of performance which prompted American's decision to order 24 more DC-6B's and six DC-6A's, added to the 17 DC-6B's on which deliveries are now nearing completion.

Inherits DC-3 Traits

By year's end American will have logged more than one-half million flight hours on the Douglas DC-6 since first putting it in service in 1947. In that time the aircraft has proved it is more than worthy of its predecessor, the much-heralded Douglas DC-3 which made up American's fleet for some 10 years.

Despite a wide spread in delivery dates on the 50 DC-6's purchased by American, the last of which was delivered on May 14, 1948 and 49 of which are still operating, there is relatively little spread in actual operating time on the planes. A recent check showed 480,925 total hours of flight time on the fleet with 10,650 hours the maximum time on any one plane and the least time at 8591 hours. Average time on all planes is now over 9500 hours.

Today American's DC-6 fleet averages 542 flying hours per day. This gives the active fleet a daily utilization of 12 hours 19 minutes. Because a certain number of planes is always inactive meeting maintenance and overhaul requirements, average time on the fleet as reported to CAB runs somewhat less. Reported utilization of the DC-6's has looked like this during their operating life:

Month of May	
1947	5:30
1948	7:22
1949	7:25
1950	7:57
1951	8:21

American's DC-6 operation provides an interesting study of aircraft utilization and the problems associated with pushing utilization higher. The DC-6's are now available for flying 16 hours per day. With 12 hours, 19 minutes of daily utilization for the active fleet in one recent month, over-all utilization was only 9 hours 41 minutes.

The problem is emphasized by checking a given flight. Flight time on the cross-country local service flight is 13 hours and 10 minutes. In order to log this flight time the airplane is actually tied up 17 hours and 45 minutes. This includes 25 minutes of normal gate time at each station plus taxi and flight time.

It becomes evident that the way to boost utilization is by providing more long-haul flights. A one-stop cross-country flight logs 10 hours, 10 minutes of flight time and absorbs only 10 hours 40 minutes of the plane's available 16 hours. Needless to say, this is not a readily workable solution.

When American started using the DC-6's in 1947 they accounted for only 10.8% of the revenue plane-miles on AA's routes. By 1951 the DC-6 fleet was accounting for 55.6% of the revenue plane-miles. Even when flying their 10.8% of the plane-miles, the DC-6's were handling 17.3% of the revenue passenger-miles. Today they handle 64.8% of the passenger-miles. The transition looked like this:

Revenue Plane Miles

Year	Total	DC-6	% of Total
1947	16,751	6,680	10.8
1948	57,903	21,430	37.0
1949	56,762	32,556	57.4
1950	38,843	31,669	53.8
1951	35,094	19,511	55.6

Revenue Passenger Miles

Year	Total	DC-6	% of Total
1947	1,437,869	249,162	17.3
1948	1,353,043	666,296	49.2
1949	1,569,461	1,088,727	69.4
1950	1,807,884	1,185,328	65.6
1951	1,175,332	761,522	64.8

American's DC-6 Direct Flying Costs

	1947*	1948	1949	1950	1951
		Cents per Plane-Mile (6 mos.)			
Flying Operations:					
Crew Salaries	7.38c	9.38c	12.10c	12.34c	12.18c
Aircraft Engine Fuels Oils & Related Taxes	19.27	28.30	28.97	28.52	29.75
All Other	14.05	3.10	4.52	2.88	4.79
Total Flying Operations	40.70c	40.78c	45.59c	43.74c	46.72c
Direct Maintenance:					
Direct Maint.-Labor	10.04c	10.95c	9.45c	9.24c	9.49c
Direct Maint.-Material	7.69	7.73	10.41	10.31	11.14
All Other	(.70)	(.02)	(.18)	(.29)	.02
Total Direct Maintenance	17.03c	18.66c	19.68c	19.26c	20.65c
Depreciation:	**19.79c**	**15.76c**	**15.43c**	**15.13c**	**14.94c**
Total Direct Flying Expenses	**77.52c**	**75.20c**	**80.70c**	**78.13c**	**82.31c**

** During the first year of operation a considerable amount of crew expense and fuel and oil costs were absorbed as training costs. This tends to make subsequent related costs look more favorable than they actually were.*

( ) Denotes Credit Figures.

The relationship of total plane-miles and passenger revenue-miles to those operated with DC-6 type aircraft is diluted to some extent by seasonal changes in schedules which do not provide equal cutbacks in schedules of both twin-engined and four-engined equipment. American uses the DC-6's exclusively on a number of long-haul flights, such as Chicago-Dallas nonstops, all flights into Mexico, etc. When seasonal flight schedule changes are made, relative usage of the two plane types changes.

Big Payloads

Longest regular flight of American's DC-6's is the 1751-mile Chicago-Los Angeles run with the shortest flight the 215-mile Washington-New York flight. While these are the extremes in American's use of the DC-6, the average of all flights shows a 484-mile average trip length and two hours and 16 minutes average trip flight time.

Under instrument flight conditions, requiring an alternate airport and about 525 gallons additional fuel, the DC-6 provides payload for 1500 pounds of mail, 52 passengers and 2882 pounds of other air express or cargo on the 1751-mile Chicago-Los Angeles flight. Normal IFR fuel load is 3322 gallons. On the next longest flight, the Dallas-Los Angeles leg, American figures 2,000 pounds mail, 52 passengers and 1285 pounds of other cargo with 2846 gallons fuel.

Flying Washington-New York, where mail loads run about 1500 pounds, the flight also carries 52 passengers and 2934 pounds of other cargo. Passenger loads are computed at 200 pounds for passenger and baggage. No small factor in DC-6 operation is its ability to operate on the longest and shortest of these flights with no loading restrictions limiting full utilization of the available payload.

Block-to-block speed of the DC-6's on American's routes is 224 miles per hour. Normal fuel consumption is 1.58 gallons per plane-mile or, based on block speed, 354 gallons per hour. Ramp time for the DC-6 averages 8% of flight time.

American's current experience shows total operating cost of the DC-6 to run $1.56 per plane-mile. For the first six months of 1951 82.31c of this cost represented direct flying expenses (see chart). Based on passenger fares of 6c per plane-mile, this would mean a break-even passenger load factor of 57%. This would be lessened by other revenue payload and would vary on specific trips.

Despite rising labor costs, American has been able to reduce its direct labor cost per plane-mile flown. This has not stopped total direct maintenance costs from moving upward, largely because of increased material costs. The DC-6 has been by no means free from maintenance and engineering problems. The DC-6 grounding in 1948 cost AAL millions of dollars, but this was later reimbursed with Federal government funds.

Standardized R-2800's

Altogether, American's giant and well-manned maintenance-engineering organization has made good progress with DC-6 maintenance and overhaul. Standardization of engines, use of both twin and four-engined equipment with Pratt & Whitney R-2800 engines, has been a major advantage to the company. AAL has some 455 R-2800's, overhauls them at 1400-hour intervals. Normally, scheduled overhauls are programmed to use no more than 2% of the allowable operating period. In May, when approved overhaul time was 1300 hours, actual time on all engines removed during the period was 1265 hours, exclusive of premature removals.

Trend in American's approved overhaul time on its P&W R-2800's:

April 1947	700 hours
Sept. 1947	800 hours
Aug. 1948	900 hours
Jan. 1949	1,000 hours
May 1949	1,100 hours
Aug. 1949	1,200 hours
Sept. 1950	1,300 hours
June 1951	1,400 hours

Since starting DC-6 operation, American has also been able to more than double the overhaul time on the cabin superchargers, once considered the most troublesome of equipment items. In 1947, approved overhaul time was 700 hours and even this was somewhat academic. By February of this year, however, it had been raised to 1500 hours. Four units have been under service test with an eye toward raising approved time further to 2,000 hours.

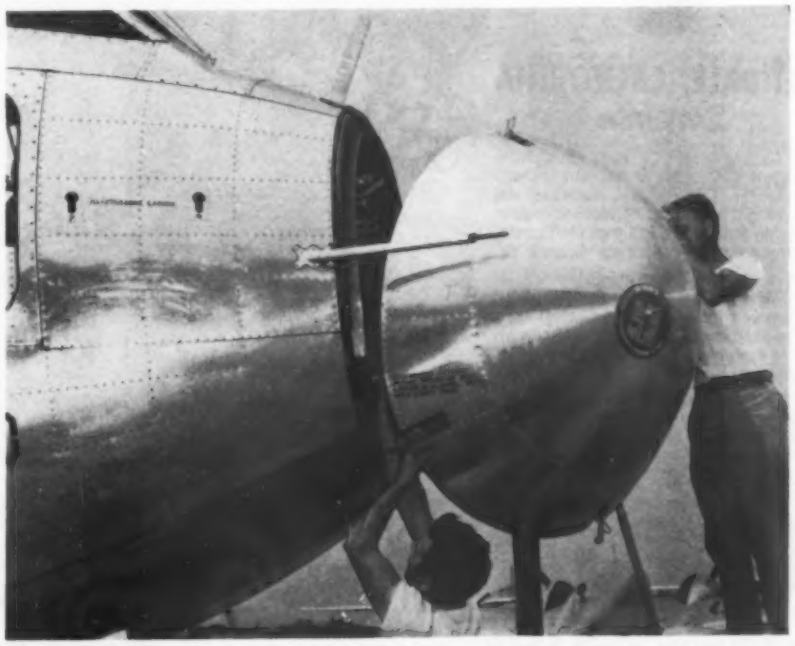
Inspection

Normal inspection program for the DC-6 fleet looks like this:

Operation	Approved Time	Man-hours
1	100 hours	60
2	200 hours	190
3	400 hours	315
Engine Change	1400 hours	44

Another indication of maintenance trends with the aircraft is the record with mechanical delays and interrupted flights as compared to total number of flights:

Second Half, 1949	3.25%
First Half, 1950	2.75%
Second Half, 1950	2.75%
First Half, 1951	3.25%



NEW LOOK IN GLIDE PATH ANTENNAE, part of the instrument landing system equipment, is shown in this photo of the production model Fairchild C-119 with the flush antenna. Previously mounted on an external mast the glide path antenna has been installed in the curvature of the nose under a plastic protective covering.

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Division

Grand Central Aircraft Co. owns its facilities and airport at Glendale. It currently employs approximately 1500 workers modifying and overhauling C-47 Douglas Aircraft and engines for the Air Force, and airliners, for Eastern, Braniff, TWA, Pacific Northern Airlines, etc.

Grand Central is Western Distributor for Wright Aeronautical and handles their West Coast service. Its engine overhaul and accessory shop is world famous. The company services executive transports, privately owned aircraft, specializes in custom interiors and Airline Radio installations.

Its own airport, Grand Central Air Terminal, was originally built by Curtiss-Wright in 1929 at a cost of approximately $3,000,000.00.

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Daily Plane Utilization

International

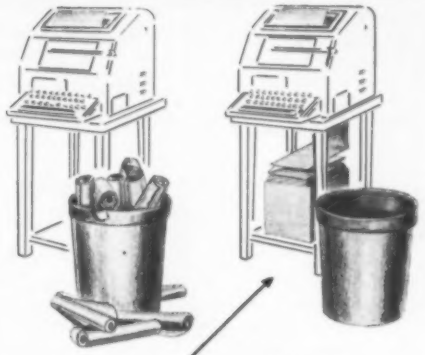
		May	June
American	4 eng. pass.	4:46	4:49
Braniff	4 eng. pass.	7:35	7:39
C & S	2 eng. pass.	8:05	8:53
	4 eng. pass.	7:29	7:41
Colonial	4 eng. pass.	5:52	6:12
Eastern	4 eng. pass.	10:46	10:01
National	4 eng. pass.	9:32	9:31
	cargo	9:56	5:38
Northwest	4 eng. pass.	8:50	10:08
	cargo	9:22	10:34
Panagra	2 eng. pass.	3:50	3:53
	4 eng. pass.	6:19	6:30
	cargo	3:47	:30
PAA LAD	2 eng. pass.	3:41	3:46
	4 eng. pass.	6:34	7:24
	cargo	3:58	4:13
Atlantic	2 eng. pass.	:42	:48
	4 eng. pass.	5:52	6:01
Pacific	4 eng. pass.	5:46	6:26
Alaska	4 eng. pass.	8:23	10:14
	cargo	7:06	10:33
TWA	4 eng. pass.	6:17	7:43
	cargo	:42	
United	4 eng. pass.	4:44	3:41
All-American	DC-3	6:07	6:32
Bonanza	DC-3	4:30	4:24
Central	Beech A-35	1:56	
	DC-3	5:18	5:39
Empire	DC-3	4:44	4:51
Frontier	DC-3	7:38	7:51
Lake Central	DC-3	4:52	5:43
	Beech Bonanza	:38	:49
MCA	DC-3	6:45	6:32
Mid-West	Cessna 190	3:11	2:58
Ozark	DC-3	6:35	6:20
Piedmont	DC-3	8:41	8:50
Pioneer	DC-3	6:55	6:56
Robinson	DC-3	6:27	6:25
Southern	DC-3	7:13	6:15
Southwest	DC-3	6:05	6:06
Trans-Texas	DC-3	6:06	6:07
West Coast	DC-3	4:42	5:02
Wiggins	Cessna T-50	3:12	2:14
Wis. Central	DC-3	6:09	6:52

Technical Literature

CLEANING ALUMINUM: A discussion of efficient methods of chemically preparing aluminum for spot welding is provided in an 18-page booklet published by Oakite Products, Inc. Booklet explains importance of proper preparation of aluminum to obtain oil-free, uniformly low resistance surfaces required for welding. It supplies specific recommendations on materials, procedures, and equipment. Address: Oakite Products, Inc., 148B Thames St., New York 6, N. Y.

PACKAGING SPECIFICATIONS: A 36-page booklet called "Military Packaging Guide," which outlines government packaging specifications and provides current information on Army, Navy, and Air Force packaging recommendations, as well as illustrations of types of packaging, has been published by Mehl Manufacturing Co., 2057 Reading Road, Cincinnati 2, Ohio.

A TALE OF TWO WPB's*



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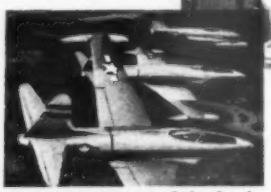

KOREAN BOOMERANG—Like Lockheed's famous Hudson Bomber ("Old Boomerang") of WW II, the F-80 *Shooting Star* has proved rugged in combat. Built to take terrific battle damage yet return to base, the F-80 did exactly that in Korea . . . another "Boomerang."

SCIENCE OF DEPENDABILITY—Lockheed's new Electronics Building will house an advanced "Weather Laboratory," where every effect of weather can be studied first-hand...increasing the *experience* behind Lockheed dependability.

Fly Constellations Via:

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OVERSEAS—Air France, Air India, AVIANCA, B. O. A. C., Israel Airlines, KLM, L. A. V., Pan American, Panair do Brasil, QANTAS, South African Airways, TWA.

Lockheed

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Look to Lockheed for Leadership

Lockheed

BEGINS WORK ON GIANT JET BOMBER

Production of an undisclosed number of giant B-47 jet bombers has begun at Lockheed's Marietta, Georgia, factory.

As the world's leading producer of jet aircraft and modern high-speed transports, Lockheed is especially qualified to build the Boeing-designed B-47's for the Air Force. Production floor space at Marietta, plus Lockheed's California factories, makes Lockheed as large today as the entire U.S. air-frame industry in 1940.

What's going on at Lockheed?
Lockheed has developed a high-speed camera with a speed range of from 1,000 to 3,000 frames a second. At 3,000 per second, a 100-foot roll of 16-mm film goes through the camera in 1¼ seconds. Purpose of the speed: to check results when fast-dropping die hits a blank piece of metal. Objective: development of stronger, new-type alloys for greater, faster aircraft ... Another current research project creates arctic flying conditions 20,000 feet above the California desert. On an actual F-94 All Weather Jet Fighter, a spray bar shoots a fine, foggy mist on the nose and wing, building up layers of ice. Plane's de-icing equipment is thus tested in actual flight.

Past and future at Lockheed...
One of Lockheed's earlier transports, a Model 10 Electra, is approaching its 25,000th hour of flying time, in continuous service since 1937 for South Coast Airways, Pty., Ltd., of New South Wales (Australia)... New Lockheed Super Constellations, in service by year's end, will be the largest, fastest, rangiest commercial transports in service. So well have earlier Constellations proved themselves around the world that more than 100 Super Constellations were ordered before the first production model flew... The new Lockheed-developed thin wing for the advanced F-94C—so thin it looks almost fragile—is strong enough to support two fully-loaded Super Constellations (150 tons dead weight)—one at each wing tip. This new plane, America's continental defender because of its electronic superiority, contains enough installed electrical power to supply a small community.

Extra Section

By William D. Perreault

THREE years of touring airline bases and poking our noses into the operating procedures and practices of airlines and other maintenance and overhaul agencies have prompted one critical conclusion: most operators have little idea of the useful records kept by their fellow airlines. Valuable information which can be used to gauge the trend of manpower productivity and equipment reliability is often non-existent. Almost every airline has at least one set of records not kept by others. Keeping records costs money, but records pay for themselves if monitored and acted on. It is pitiful how little some airlines know about their past performance and relative standing today.

•

If United Air Lines is any indication of the industry, air travel must certainly be restful. UAL tells us they wear out 1,000 blankets, 2,000 pillows, and 3,000 headrest covers each year. While it undoubtedly presents quite a bedding bill, we'll wager that the unparalleled upholstery shop run by Bill Hoare's group in South San Francisco keeps the bill at manageable levels.

•

Engine failures have always been a serious matter, universally regarded accordingly, but last week we got a new angle on them. In a report entitled "Medical Aspects of Supersonic Flight" appearing in the Manchester Medical School Gazette, Squadron Leader F. Latham notes new dangers relating to engine failures in planes flying at supersonic speeds. A failure at 750 miles per hour, he states, would cause an instantaneous forward deceleration of at least 25G, a figure comparable with that experienced in some crashes. Prone pilots would be particularly vulnerable. Referring to the problems of bailing out at speeds of 700 m.p.h., Latham figured that an average body with five square feet of frontal area would be subjected to almost three tons of applied air pressure.

•

One airline recently removed two Pyrene fire extinguishers from an airplane because the contents appeared to be contaminated. Contents of one proved to be at least 15% Varsol or a closely related product. Indications were that the extinguishers had been filled with Varsol and used for cleaning guns. Later they were returned to the airplanes without rinsing and refilling. Warned the airline: Pyrene extinguishers shall never be used for any purpose other than to extinguish fires. The seriousness of this incident cannot be over- emphasized.

•

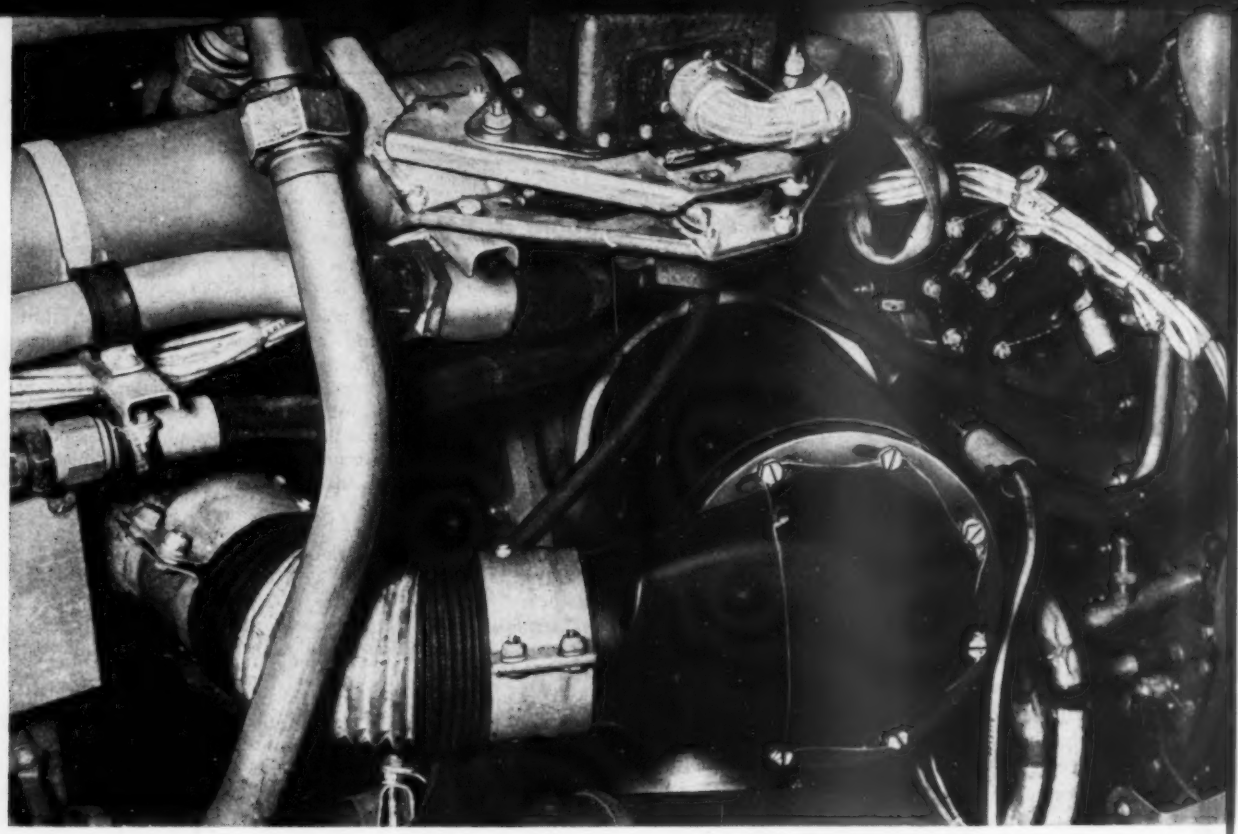
Above incident reminds us of another case in which a routine check uncovered a dangerous (understatement) condition. A mechanic, pulling a regular flare-drop test in the hangar, noted the flare can torn. On checking it proved to be the shipping can that had never been removed from the flare proper. The impact cable had been carefully connected to the ring normally used to open the can and get at the flare. A check revealed that virtually all the airline's planes were hooked up in the same way. Releasing the flares would simply have dropped deadly missiles which could not have helped the pilot. The shipping container was and is nicely patterned, making it possible to insert the entire unit in the flare chutes as readily as the flare itself.

•

United Air Lines has been service testing Pratt & Whitney R-2800 engines with spark advance to improve fuel consumption during cruising operation. Parts have already been ordered to equip all of its Douglas DC-6 R-2800's. When in full-scale use this could mean a saving of about $250,000 per year on United's $12 million DC-6 fuel bill.

•

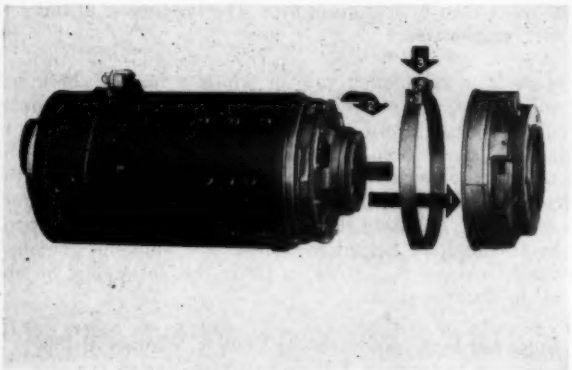
United has another interesting project in a rework of the Sperry electric H-3 Horizon. The engineering department has modified trial units by removing the movable plane, which forced the dial rearward in the original model and controlled dial size, making it possible to move the markings forward onto a larger area and adding 5/16 of an inch to the useful dial size. A longer horizon bar is also used.



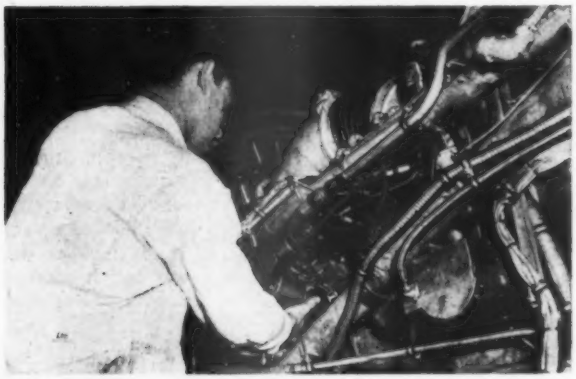
IN THE NEWS

NEW GENERATOR MOUNT SAVES TIME AND MONEY

This snake pit is a mechanic's nightmare when it comes to removing a generator for routine maintenance. General Electric's new, QAD (quick attach-detach) generator mount eliminates the need for universal joints in mechanics' elbows. Generator replacement time is cut from hours to minutes. The QAD has been selected as an industry standard—for hard-to-get-at installations—by a joint Air Force-Navy committee. It is interchangeable with present generators of equivalent rating.



Simple as one, two, three! 1. Fit generator into slots of mounting ring (permanently mounted on your engine), 2. engage by a slight turn, 3. adjust and tighten clamp ring. The QAD mount can be supplied to fit any G-E aircraft generator. Simple, inexpensive, light weight, the new mounting can be used to mount a generator on piston engines or a starter-generator on jet engines.



One man can replace a generator where two were required before, in a fraction of the time. No special tools required . . . no blind fumbling. And, this time and money saving device may be added to your fleet gradually—as ships come in for overhaul. For further information, call your General Electric aviation specialist or write, ***General Electric Company, Schenectady 5, New York.***

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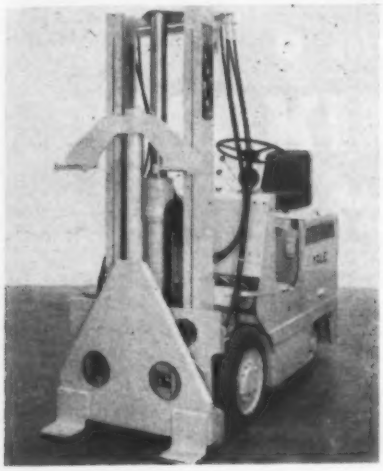

Lift Truck Clamp

An automatic clamp attachment for lift trucks handling crated and boxed products is now available from Yale & Towne Manufacturing Co. Because of clamping action, the new device eliminates need for pallets. Hydraulically operated, the clamp handles two boxes or crates up to 75 inches high and 36 inches wide and stakes them 17 feet high simultaneously.

The 3,000-lb Yale electric truck on which the new clamp was field tested was also equipped with a hydraulic side shifter, permitting the load and clamp to be shifted four inches to either side of center. This permits close accurate spotting of the load to save storage space next to walls and between loads.

Address: **The Yale and Towne Manufacturing Co.**, Philadelphia Div., 11,000 Roosevelt Blvd., Philadelphia 15, Pa.

Vibrationless Base

Designed to protect airborne equipment such as aircraft radios, radar, Loran, and other electronic equipment, a new mounting base has been announced by T. R. Finn & Co., Inc. The bases, called Finnflex, are suitable for military and commercial installations.

Manufacturer states that the bases exceed Army-Navy E-19 drop-test requirements and meet the dimensional and metal requirements of joint Army-Navy C-172A specifications. The mounting base is carried by four metallic spring isolators, which provide protection by maintaining high vibration-isolating efficiency from —80 degrees F to +250 degress F. Friction dampener prevents excessive movement at resonant frequencies.

Address: **T. R. Finn & Co., Inc.**, 333 Jackson Ave., Bronx 54, N. Y.

Low-Cost VHF

A new, low-cost Omnihomer unit, said to bring VHF communication and navigation within the means of the average aircraft owner, is being marketed by National Aeronautic Corp.

The 8½-pound unit, designed to be mounted on the instrument panel, measures 5¼″ x 6⅞″ x 10¼″.

The receiver tunes from 108 mc. to 127 mc. A geared-down crank tuner allows easy selection of desired frequency. Transmitter is supplied with 122.1 and 122.5 mc. crystals with provision for two extra crystals which may be added at extra cost.

Address: **National Aeronautical Corp.**, Ambler, Pa.

Metallizing Guns

Two new metallizing guns have been announced by Metallizing Engineering Co., Inc. The guns, Type 4E for machine elements and Type 5E for corrosion protection coatings, are described as developing highest spraying speeds yet available in guns designed for hand-held work. Feature of the guns is a jet siphon in the gas head which compensates for variations in gas pressure as high as 10 lbs. and thus provides uniform coatings.

An automatic control for wire feed compensates for kinks in the wire, reel stand drag, etc.

Type 4E gun is designed to spray all wires from 20 B&S gauge to ⅛″ in any metal at speeds up to 40% faster than previous models. Type 5E is the first gun designed for high-speed spraying of the softer metals such as zinc and aluminum for protection of equipment and structures against corrosion for periods ranging from 20 to 30 years. 5E sprays 3/16″ wire, depositing a maximum of 55 lbs. of zinc per hour or 15 lbs. of aluminum per hour. Both guns may be used mounted or hand held.

Address: **Metallizing Engineering Co., Inc.**, 38-14 30th St., Long Island City 1, N. Y.

Axial Blowers

A new line of axial blowers for cooling electronic equipment has been developed by Stanta Tool and Machine Co. for use with radar, radio transmitters, and detection devices.

For such equipment, the Vane Axial Blower is usually applied in glove-fit locations. Constructed of aluminum, the blower units are available in 400 cycle, 3-phase and single phase, 60 cycle single phase and 27½-volt D.C. Speeds range from 10,000 RPM to 3,300 RPM, depending upon pressure and volume requirements. Illustrated units are 2″ 4″, and 6″ in diameter. Intermediate sizes are also available.

Address: **Stanat Tool & Machine Co.**, 47-28 37th St., Long Island City, N. Y.

Seat Attachment

A new 40G, lightweight attachment fitting for seats, litters, etc., which is being specified for use with the Standard AN 516 stud on aircraft, is being manufactured by Gordon D. Brown and Associates.

The close-coupled fitting locks or unlocks by sliding a collar up or down, and its design permits removing or installing the seat or litter in place with a vertical motion. Holding jaws remain in the open position when the fitting is unlocked so that the seat can be located over the stud or removed from it. Bottom surface of the stud is free of all protrusions, so no damage can result from dragging the seat across a floor.

Address: **Gordon D. Brown and Associates**, 407 K Commercial Center St., Beverly Hills, Calif.

Technical News Digest

• **A "Symposium** on Jet Engine Part Inspection" will be featured in Detroit on the afternoon of October 17 at the Society for Non-Destructive Testing during its four-day meeting at Hotel Detroiter. Program is part of the World Metallurgical Congress, National Metal Congress and Exposition.

• **Overhaul time** on its Pratt & Whitney R-2000-9 engines, used in the Douglas C-54's, has been raised to 1400 hours by the 1261st Air Transport Squadron of MATS. Time was formerly 1200 hours.

• **Metallurgical developments** which would permit raising turbine bucket temperatures by 100 degrees would raise turbine efficiency about 15% and net power output of turbine engines by 30%, according to Dr. C. G. Suits, vice president and director of research with General Electric.

• **United Air Lines** has completed the country's first VHF radio network using automatic sending and receiving equipment to automatically receive and transmit VHF signals from points of origin and destination. UAL uses five stations on the Cleveland-Chicago connection with the terminal stations manned in the regular manner but those at South Bend, Ind., Auburn, Ind. and Toledo featuring 50-watt automatic units.

• **Contract to manufacture** all passenger seats for the Convair 340's has been awarded Hardman .Tool & Engineering Co., 1845 South Bundy Drive, West Los Angeles by Consolidated Vultee Aircraft Corp. Production on this contract, said to be the largest passenger-seat contract awarded in four years, will begin in the fall of this year, extends through 1953.

• **The three DC-3's** recently purchased by Robinson Airlines were sold by Ocean Air Tradeways, an affiliate of United States Overseas Airlines, Inc. OAT had previously sold a single DC-3 to Robinson.

• **First commercial** microwave multiplex communications system in Hawaii has been completed by Hawaiian Airlines, linking Honolulu Airport and one of HAL's VHF radio stations in the Waianae mountains. System is one of four links being used to complete HAL's communications network. Unit will handle as many as 10 messages simultaneously.

• **Some 413 non-aeronautical engineers** have been given transition training in aviation projects, including aerodynamics (4), thermodynamics (23), flight test (2), stress (52), and research (12) by Republic Aviation Corp. since it started its training program in December 1950. Program yielded 341 drafting trainees in addition to the specialists listed.

• **Wind tunnel** at Cornell Aeronautical Laboratory, Inc. will have its power upped from 14,000 horsepower to about 33,000 and undergo other improvements to span the transonic speed range using $1½ million granted by the U. S. Air Force for research expansion.

• **Wright Aeronautical Corp.** at Woodridge, N. J. is using an electronic system of measuring dynamometer loads for full-scale tests of aircraft reciprocating and turbojet engines. Load cells are manufactured by Baldwin-Lima-Hamilton Corp. of Philadelphia.

• **"Annual Report** of the National Bureau of Standards for 1950" is now available from the NBS, U. S. Dept. of Commerce, Washington 25, D. C. at 50c per copy. It is a 113-page summary of the scientific investigations of NBS in electronics, metallurgy, applied mechanics, meteorology, radio propagation, etc.

• **Medal of honor** of the Institute of Radio Engineers has been voted to General Electric's Dr. W. R. G. Baker, vice president and general manager of the G-E Electronic Division. Baker, treasurer of the Institute, is cited for "his early technical contributions to the radio transmitter art and long-sustained and effective leadership of institute and engineering groups."

• **A seven-tube miniature** intermediate-frequency amplifier, developed by the National Bureau of Standards under the sponsorship of the Navy's Bureau of Aeronautics, is described in NBS report 1573. Emphasis is placed on use of preassembled groups of similar circuit elements to simplify production.

• **Changeover from statute to nautical miles,** scheduled to go into effect in official government-service phases of the aircraft industry in 1952, was discussed in Washington recently at meetings of CAA and other Federal Agencies including the Weather Bureau, Coast and Geodetic Survey and Civil Aeronautics Board. General aim is an educational program to insure a smooth transition prior to effective date.

Bendix Gives a Tough Course in New Radar

Perhaps one of the toughest study courses ever offered in the field of electronics is being given at the Bendix School for Electronics, located at Pimlico (formerly Curtiss-Wright) Airport, Baltimore.

The course (actually, there are several different courses) is designed primarily to train company field engineers and Air Force personnel in the operation and maintenance of AN/FPS-3, the advanced and highly complex early warning radar equipment being built for the Continental Air Command by Bendix Radio Division of Bendix Aviation Corporation.

Part of Contract

When Bendix was awarded a contract last year for an undisclosed number of FPS-3 installations, the Air Force inserted a clause stipulating that Bendix would set up a school to train qualified AF personnel in the use and servicing of the equipment and also would train a substantial number of its own field engineers to work expressly on the new radar installations.

The school was started late last year at Harbor Field, Baltimore's old municipal airport, and was moved to Pimlico Airport in early spring.

Every Air Force man sent to the Bendix school is experienced in radar and communications work, and most have successfully completed electronics courses at a recognized school. They are carefully screened and given an examination upon entrance, and must subsequently pass several other types of examination before being graduated.

Separate Classes

Classes are small, ranging in size from six to about 20 men. For the most part, AF personnel and Bendix engineers attend separate classes. A day at the school is divided about equally between lectures, laboratory work, and supervised study.

W. T. Spicer, chief engineer of the Field Service Departments for Bendix Radio, and L. F. Graffis, chief field engineer, are supervising the school. Assisting them are John P. Sweeney and Earl Purtura.

The principal course at the school, the one dealing with the FPS-3 equipment, runs for eight weeks.

Under the present contract, the school is to be operated until March, 1952, but if Bendix's production orders should be increased, as is altogether likely, the school will be continued.

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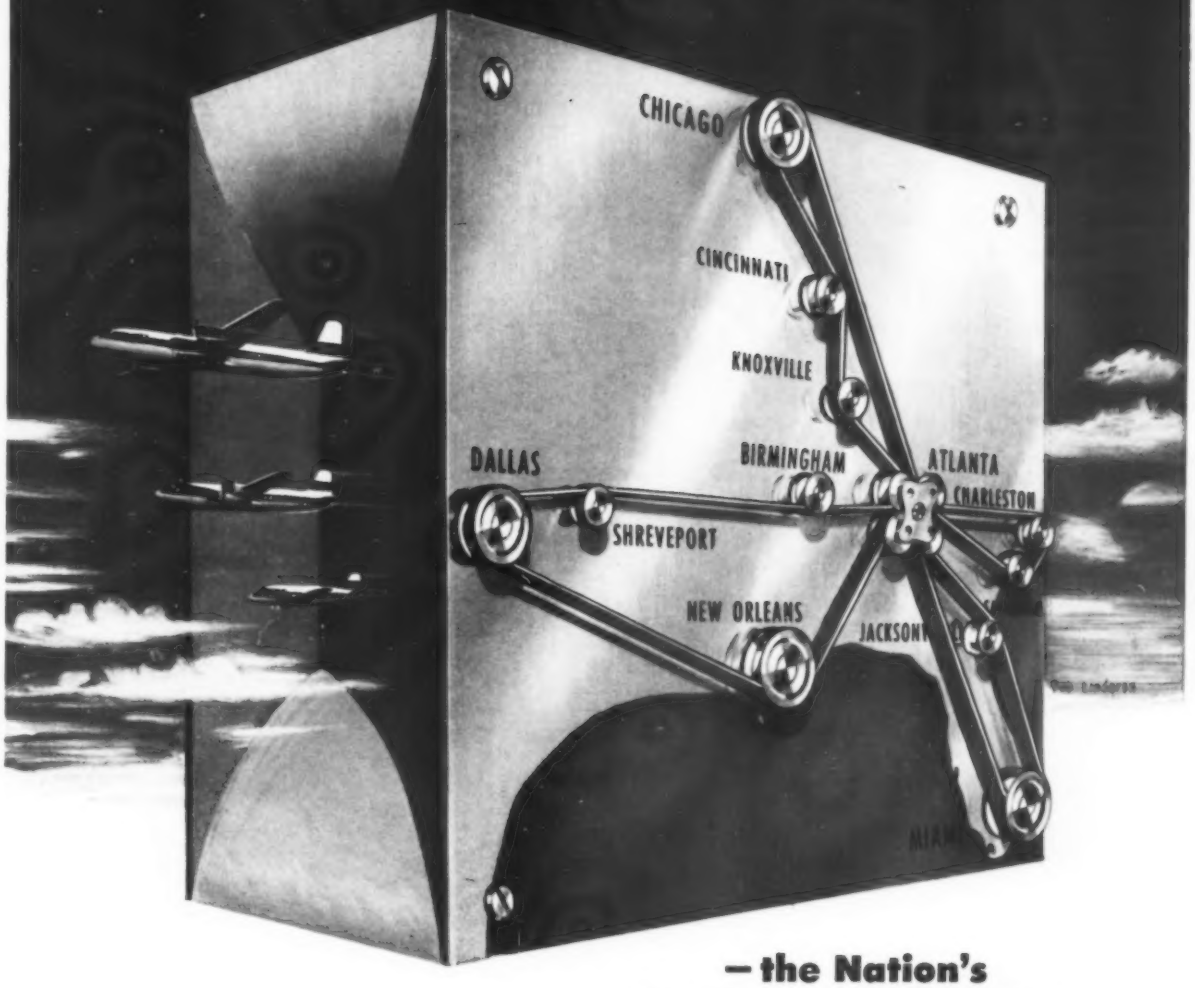

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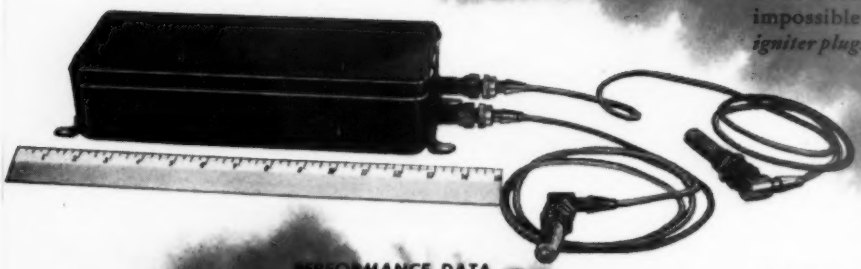

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Engine starting difficulties due to fuel-wetted plugs or carbon fouling can now be reduced to a degree previously thought impossible due to the *shunted surface gap igniter plugs.*

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This new T.L.N. ignition system complies with all pertinent A & N Specifications, has been exhaustively flight tested and is now in production for service engines.

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PERFORMANCE DATA

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OUTPUT	1000 Volts D.C. to Igniter Plugs
AMBIENT LEAD TEMPERATURE	500° F
ALTITUDE	60,000 Ft. Plus
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Inflation Dilutes Plane Depreciation Funds

Rising equipment prices and present accounting practices result in smaller replacement reserves.

By Gotch & Crawford

Planning Consultants

THE current inflation is affecting airline financial affairs in some strange and devious ways. Today's dollar buys half as much airplane as it did five years ago—and this single fact tends to understate airline costs, inflate reported earnings and impair the capital of the airlines.

While American Airlines will serve below as an illustration of these points, it is emphasized that these effects apply in various degrees to all airlines.

At the last annual meeting of American's stockholders, C. R. Smith, its president, stated that the replacement cost of American's equipment in service was $63 million greater than the original book value.

American paid an average of $228,000 for 79 Convairs which are now priced at over $500,000, and paid an average of $570,000 for 49 DC-6's while DC-6B's presently sell at approximately $1 million each. As a result, American carries on its balance sheet assets which, on the basis of today's market, are substantially undervalued. Consequently, depreciation charges are roughly one-half as much as would be charged at today's purchase prices. In 1950, American's charges for flight equipment depreciation were $9,274,000. This amount is probably $8 or $9 million less than would result from depreciation of the same fleet at current prices. If one assumes that these equipment price levels are here to stay, the effect is that American understates expenses by $9 million annually and increases its net by an equal amount.

Dollar Capital Gain

The day that American purchased its equipment ahead of the price rise it, in effect, accomplished a capital gain. Such a capital gain is one of dollars and not of true value and could be realized only through sale of the asset. However, the gain is substantially realized in the form of annual installments of net operating income during the years in which depreciation is understated and income overstated.

Thus true capital values which ought to be built up in reserves before taxes are reported instead as income and put through the tax wringer. After taxes, appropriate amounts of earnings must be reserved for the day when capital assets must be renewed.

Investment Integrity

A major question arises between American's management and its investors: if equipment values on the balance sheet are increasingly understated (as the price level goes up), is the integrity of capital investment being preserved under present accounting policy? Of course, dollar amounts are being preserved, but true value possibly is not.

The same comment can be made regarding a great many corporations during times of rapidly rising prices. In accounting for tax purposes or for CAB purposes, the law does not recognize the changing purchasing power of the dollar. The fact remains a fact, with or without legal recognition.

Theoretically, American might reappraise its assets, set up an asset account entitled "Flight Equipment Appreciation" and credit itself with a corresponding amount in "Reappraisal Surplus." These entries would simply set up on the books dollar values which exist but are not declared at present. Thereafter, depreciation might be charged on flight equipment as at present, and also upon the book asset "Flight Equipment Appreciation."

Useful Accounting

While such accounting could not be recognized by the Internal Revenue Bureau or the CAB, it would serve a purpose for American and its investors. It would have the practical effect of adding to depreciation charges amounts which would build up larger reserves. Recognized expenses would be greater and profit available for dividends would be less; but at the close of a depreciation write-off period, reserves in line with the adjusted value would be set up.

Underlying these problems is the basic question of the purpose in charging depreciation:

1. To maintain the original capital dollars invested?

2. To determine the true cost of operations?

3. To finance replacement of equipment?

Since the first of these purposes is principally recognized under airline

Original Costs of the Airlines' New Planes

As of December 31, 1950

Company	No. Aircraft	Total Cost	Average Cost	Depreciation Period (Years)
DC-6 Types:				
American	49	$27,960,858	$570,630	7
United	44	26,746,388	607,872	7
Braniff	6	3,398,415	566,402	7
Delta	6	3,628,650	604,775	7
National	8	5,158,233	644,779	7
Lockheed 49 Types:				
Eastern	20	14,539,056	726,953	4
TWA	59	40,735,327	690,429	7
Capital	5	2,743,696	548,739	7
Chi. & Southern	3	2,183,770	727,923	5
Boeing 377's:				
United	7	10,105,772	1,443,681	7
Northwest	10	13,119,200	1,311,920	7
Convair 240's:				
American	79	18,017,196	228,066	7
Western	10	1,650,174	165,017	7
Continental	5	1,173,887	234,777	7
Mid-Continent	4	1,146,431	286,608	7
Northeast	5	1,245,048	249,010	7
Martin 2-0-2's:				
Northwest	21	6,036,530	287,454	5
Four-Engine Total	217	150,319,365		
Twin-Engine Total	124	29,269,266		
Combined Total		**$179,588,631**		

Source: Aircraft data as reported to CAB.

regulation and the third is not recognized, maintenance of true capital value in a time of increasing prices is an acute problem which is aggravated by the pressure upon management to declare as dividends "earnings" which must be retained if true capital value is not to be dissipated. The extent of this problem may be judged by study of Table I which shows reported numbers of newer types of aircraft in use and reported original cost for certain carriers in the trunk class.

At the end of the depreciation period, if only the original total cost of $179 million is available for replacement purchases, one may estimate that, at today's prices, this group of carriers will be "out" the equivalent of 75 to 100 four-engined and 50 to 60 twin-engined aircraft. Clearly, present charges for depreciation are not adequate for purposes of replacement, and other capital reserves must be built up ahead of dividends.

Of course, one may argue that the replacement cost is immaterial since, for example, American will not replace its DC-6's with other DC-6's, nor will DC-6's necessarily be replaced unit-for-unit with a new type. The essential element to be replaced is space available—either available ton-miles or available seat-miles of capacity. Thus two DC-6's costing roughly $1 million and generating a combined total of approximately 66 million available seat-miles a year might be offset by one jet transport of equal seating capacity but twice the speed. If the price of the jet were $1 million, the ratio of capital cost to productivity would not change at all.

More Data Needed

Too little is known about either the price or the performance of the next major transport type to make an analysis along these lines at this time. If it develops that available capacity can be maintained with new types at an original capital cost equal to or less than that of fleets presently in use, it will simply mean that aircraft manufacturers have succeeded in canceling out their increased costs of materials and labor through improved design. Certainly, prudent airline planners cannot adopt this capital-capacity argument and rely solely upon technological advancements to nullify the effects of inflation.

Airline management must take what measures they can to make certain that true capital values are not siphoned off from the balance sheet into income and thereafter dissipated.

Airline Commentary

By Eric Bramley

THE management of Capital Airlines has a deal whereby if one of the company's stations goes over its revenue quota for 12 months in a row, the station personnel get a day off and the big shots come out from Washington to take over their duties. So you may find **Slim Carmichael,** president, loading cargo, **Jim Austin,** v.p.-traffic, selling tickets, etc.

This happened recently at Milwaukee, a prize-winning station. Carmichael worked diligently all day wrestling baggage and cargo. Suddenly he was confronted with an American Airlines' Convair. Capital handles AA's ground service at Milwaukee. There was nothing for Slim to do but proceed with the unloading, which he did adequately, if not enthusiastically.

So we present here what may be the only picture in existence of an airline

president unloading another airline's airplane. The gentleman on the left, incidentally, is unidentified. Anyone know him?

•

From time to time we have printed box scores of drinks sold in a year by various airlines. Wayne Parrish, editor and publisher of AMERICAN AVIATION, **who has been on an extended European trip, adds to the total by forwarding us the following memo:**

"Aer Lingus (Irish Air Lines) sold 55,312 tots (jiggers) of Scotch and only 39,062 tots of Irish whiskey in one year. Also 1,592,330 packs of cigarettes, 3,751 lime juice, and 23,314 boxes of matches. What else do you want to know?"

After this complete report, the only thing we could ask for would be the colors of the passengers' eyes.

•

A Japanese traveler entered United Air Lines' Chicago ticket office and politely asked the fare to Yokohama. **Mary Taylor,** in the international travel department, informed him that the round-trip rate was $1,461.83.

"Extremely high price," said the Japanese, obviously astounded.

"Japan is very far away," he was reminded.

"I do not wish to go to Japan, please. I want to go to Yokohama."

"Yokohama?" repeated the bewildered agent.

"Yes, please, Tulsa, Yokohama."

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LV. 12:00 Noon EST	LV. 12:20 a.m. EST

TO NEW YORK

LV. 9:25 a.m. PST	LV. 7:00 p.m. PST
LV. 9:30 a.m. PST	LV. 10:45 p.m. PST
LV. 9:50 a.m. PST	LV. 11:25 p.m. PST

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Airline People

ADMINISTRATIVE

John A. Collings, Tran-World vice-president-operations was promoted to executive vice president with continued duties of operational v.p. combined with his new position. **David W. Harris** and **Gordon Gilmore** elected vice presidents of industrial relations and public relations, respectively.

K. R. Ferguson, former v.p.-operations and engineering for Northwest named to civil aviation mobilization post replacing **George Gardner,** Northeast president, who was temporarily serving as head of the air transport division of the Office of Civil Aviation Mobilization.

TRAFFIC & SALES

John R. Long named Philippine Air Lines' acting regional traffic and sales mgr. for southern Asia, with headquarters in Calcutta.

Dailey

David G. Dailey, recent manager of telephone sales for United Air Lines at Cleveland, is now with the company's school and college service division at Los Angeles.

Jerry Sechser is now d.s.m. at Portland, Ore., for Western. He succeeded W. W. Marsh, resigned.

John Glass, formerly c.t.m. in San Angelo for Trans-Texas, promoted to regional traffic mgr.

Albert L. Caughey, Delta's cargo sales rep. in Cincinnati, promoted to c.s.m. in Savannah. **William Graves** named Delta sales rep. in Charleston, S. C., and Earle M. Hollingsworth joined company as ass't to schedules mgr. **Charles Payne.**

Bell

Mel Anderson, v.p.-traffic and sales of Lake Central, resigned and has returned to Houston where he is negotiating an off-line sales representation for several airlines on a share-cost plan.

Harrold D. Bell appointed director of personnel for Continental succeeding **Roy F. Vincent,** resigned.

OPERATIONS-MAINTENANCE

Capt. F. D. Smith is now dir. of flight operations for Colonial. He replaced **Capt. G. R. Janas** who requested reassignment to flight status.

Charles Bursiel appointed Trans-Texas' supt. of stations.

Jack D. Anderson is now supt. of stations for Lake Central.

Carl G. Magnuson named by Northwest to newly-created post of ass't to the mgr.-maintenance division.

J. J. Patrick appointed ground school instructor for Mid-Continent's pilot training program at Kansas City.

Off press soon!

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Major Cities Face Anti-Noise Drives

Airports seek to soothe increasing noise abatement clamor without sacrificing operational safety.

MAJOR airport operators and government officials are becoming increasingly concerned over the rising tide of anti-noise campaigns.

The protests against plane noise which have come from residents of areas adjacent to large terminals furnished one of the major topics of discussion at the recent CAA Airports Advisory Committee meeting in Washington.

From relatively minor but nonetheless bothersome local situations, the noise-nuisance problem recently assumed national significance when two members of the House of Representatives introduced resolutions calling for a Congressional investigation of the noise and safety problems resulting from aircraft flying low over populated areas adjacent to airports.

Previous to this action, the aviation industry had been alerted to the gravity of the situation when:

• **Public officials in Northern New Jersey** threatened to sponsor state legislation aimed at closing down Newark Airport if the noise problem there failed to improve.

1,000-Ft. Limit

• **City council of Alexandria, Va.,** which is on the southern approaches to Washington National Airport, enacted an ordinance restricting planes to a minimum altitude of 1,000 feet when flying over the town.

In New York, a *Journal-American* editorial summarized the situation:

"Short of striking New York City from the nation's airline map—and nobody in his right mind proposes that—there's no way humanly possible today to bring about 'noiseless' operation (of airports).

"Civic clubs and associations of one sort or another can pass resolutions from now to Christmas and issue outraged cries so hot they ought to be printed on asbestos, but the fact remains:

"You just can't have big transport planes landing and taking off without the roar and whine of their engines."

Some people apparently wouldn't accept this view, however, and the protests continued. On half a dozen occasions last month, the Port of New York Authority received anonymous threats that time bombs would be planted in the terminals or at other strategic points at both La Guardia and Idlewild airports. These threats apparently came from individuals annoyed by aircraft noises, but the Authority could not afford to ignore them, and the consequent security steps that had to be taken cost both time and money.

Noise in Newark

The Newark situation was much more acute, for civic organizations and town officials of eight or ten communities near the airport had banded themselves together in a fight against plane noises and were promising to put pressure on the state legislature to close down the airport.

So seriously did the Port Authority take the matter that it authorized an expenditure of $187,000 to build a new taxiway at Newark Airport to enable the airlines to make take-offs to the east under certain wind conditions by using a runway that has heretofore been used but rarely. Increased use of this runway was expected to lessen complaints from populated areas west of the airport.

Meanwhile, as a partial solution to the Newark problem, members of the Air Line Pilots Association have been following a recommendation of ALPA's Headquarters Engineering and Safety Department and making left turns as soon as possible after take-offs on runways 28 and 24 at Newark.

In the case of Runway 28, pilots are advised to make a left turn as soon as safely possible after take-off to avoid the Hillside section, then climb to 1,200 feet and proceed on course. In the case of Runway 24, a left turn is recommended over the Jersey meadows "whenever safely possible" in order to avoid the residential area in line with the runway.

ALPA cautioned its members not to "do something that would again accentuate this trouble or arouse the local people . . . In other words, without jeopardizing safety, let's all endeavor to keep the noise level at as low a degree as possible."

At Washington, the traffic patterns in effect since last year remain unchanged, but as a matter of operating procedure the airport traffic control tower has discontinued approval for short right turns immediately after take-off from Runways 18 or 21 "unless necessary in the interest of safety—which includes instrument weather conditions."

Also, pilots are urged, in so far as is possible, to remain above the minimum traffic pattern altitude of 1,200 feet. However, the minimum altitude requirements of the Alexandria ordinance do not apply to aircraft engaged in taking off or landing.

ALPA is watching the trend closely. So are the airlines, as is CAA's Office of Airports and Office of Federal Airways. All three, as local situations arise:

• **Explain to the local citizens** and officials the complexity of air traffic patterns and operations and pledge their joint efforts to minimize noise, providing it can be done without sacrificing or jeopardizing safety.

• **Explain to pilots** operating into the area the principal source of the complaints and ask them to cooperate in abating the noise nuisance when operating over the areas in question.

• **Review traffic patterns** for the purpose of effecting modifications that will obviate complaints without decreasing safety.

States Rights

Major issue is the question of Federal rights versus the rights of states and municipalities. In other words, is control of the airways a prerogative of the Federal government, which cannot be infringed upon by local legislation

There is little doubt but that CAA would win out in a court test, but noise-nuisance problems probably will continue to crop up here and there, and the industry will have to deal with them as best it can.

FIRST PIPER L-21 two-place liaison planes for the Army are primarily modifications of the Super Cub. These planes are powered by a 125-horsepower Lycoming engine and can land and take off in less than 150 feet. Piper is producing the craft for the Army "in quantity."

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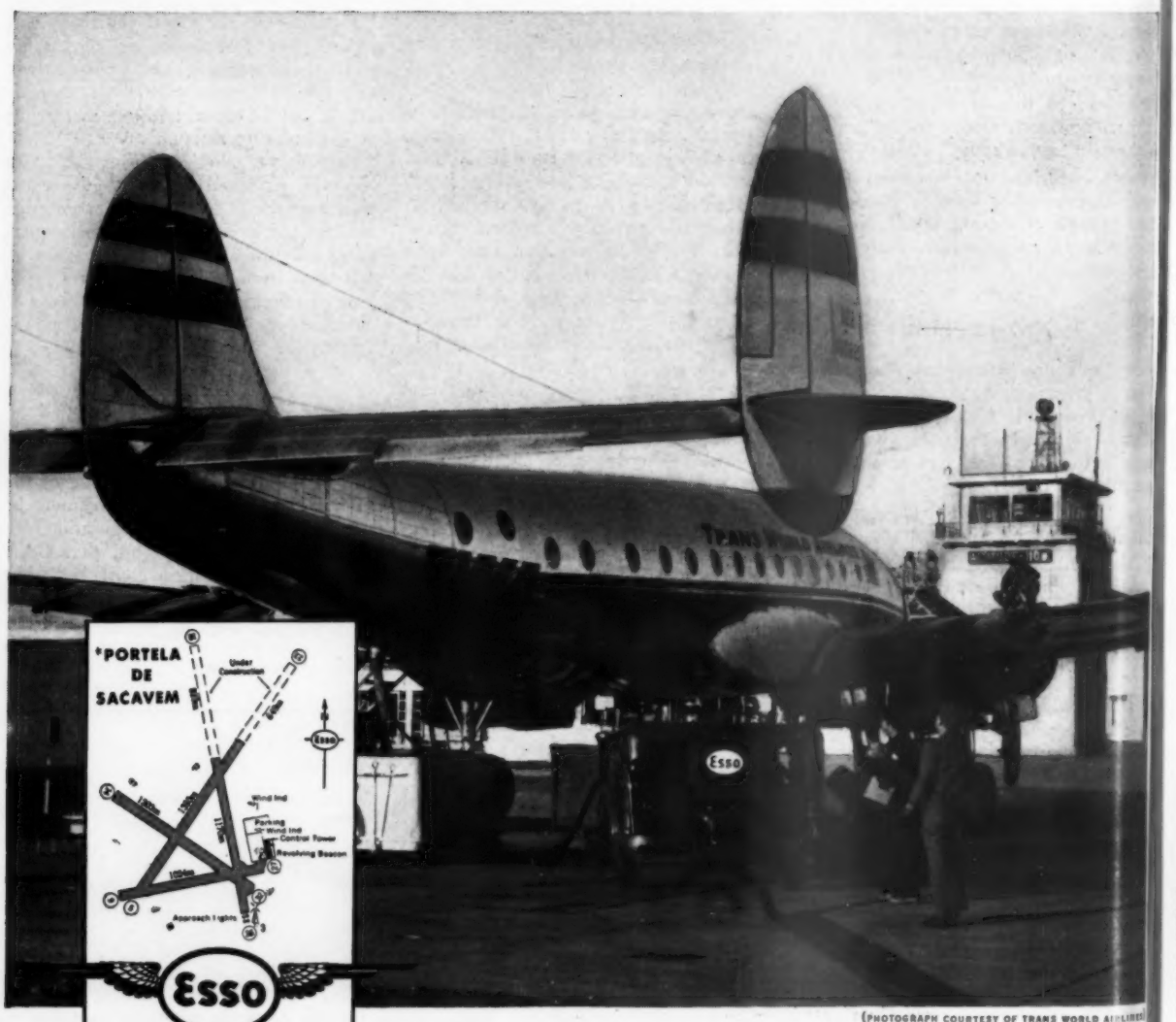
*At Portela de Sacavem Airport, as at Santa Maria Airport, Azores, the marketer of Esso Aviation Products is Esso Standard Portugal, Inc.



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1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Wayne W. Parrish, Washington, D. C.; Editor, Wayne W. Parrish, Washington, D. C.; Managing Editor, Eric Bramley, Washington, D. C.; Business Manager, Leonard Eiserer, Washington, D. C.

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Sworn to and subscribed before me this 1st day of October, 1951.

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Will CAA Force New Type of Air Show?

Operators face loss of both revenue and publicity from tighter restrictions in name of safety.

By VERA FOSTER

A NUMBER of fixed base operators are protesting CAA's action which, they say, virtually bans air shows as known today.

The operators contend that they stand to lose both revenue and publicity. Some of them urge that shows be continued, with stricter enforcement of safety by CAA. None of them, of course, condones acts that are dangerous to spectators.

'Crazy' Flying Out

CAA's teletyped directive, issued after the air show crash at Flagler, Colo., which killed 20 persons and injured 50, instructed CAA safety agents to disapprove waivers for acrobatic exhibitions not under strict radio control, delayed parachute drops, "crazy" flying acts, deliberate crack-ups, dog-fighting, and "similar hazardous types of flights."

CAA Administrator C. F. Horne denied that the Flagler mishap prompted the order. Departures from the civil air regulations at air shows are a device to interest people in aviation are no longer needed, he asserted. At the same time he commented that air shows as such were not necessarily dangerous, and that the Flagler accident was the first spectator fatality in over 20 years.

Although maneuvers for which waivers may be issued are strictly limited, waivers will still be available. Application forms must be submitted in triplicate to any CAA district office, or, in the case of a planned air race, to the regional office. Forms should be sent in from seven to 10 days in advance of the air meet.

However, there is a feeling that so many maneuvers have been deleted that little will be left of the standard air show program. In place of these acts, CAA officials point to their booklet, The Air Fair, which contains a long list of "educational" flying and static program ideas. Also suggested are military formation flights and recruiting exhibits.

If a field is fortunate enough to be equipped with radio transmitting equipment, and the acrobatic aircraft carries two-way radio, then acrobatics may be done. Parachute jumps are okayed if they do not involve free falls and "batman" acts.

Races, although they will be more strictly supervised, may still be flown if not in the free-for-all classification.

Crop dusting and spraying demonstrations will, of course, continue to be encouraged.

Operator reaction to the ban on thrill air shows is strong in some quarters. Airport owners in the mid-west and south will feel the loss of revenue and publicity keenly, since surprisingly large crowds are attracted to the smaller fields and moderate-sized airports by air shows.

City crowds are known to be difficult to attract to the airport, so operators near larger cities tend to shrug off the loss of "a few hundred dollars" but express regret that valuable publicity will be lost. This publicity quite often showed numbers of persons the way to the airport.

Beverly E. "Bevo" Howard, well known head of Hawthorne Flying Service at Charleston, S. C. and three-time international aerobatic champion comments: "The CAA edict will in effect abolish most air shows as we know them. In my opinion such action is an arbitrary decision against a long-established medium of entertainment."

Stricter enforcement of safe conduct of air meets must be CAA's role, Howard suggests, and notes that such enforcement might possibly have prevented the Flagler accident.

An Air Meet Advisory Committee should be selected, the veteran air show pilot further recommended, to evaluate air show problems without prejudice and to make appropriate suggestions based on personal experience and observation.

Screen Flyers

Experienced airmen who participate in air shows have indicated that they too would welcome more careful screening of performers.

How two-way radio would add to safety in acrobatic acts, pilots fail to see. A CAA spokesman asserts that this communication could be used to warn the pilot away from too close proximity to the spectators, to warn him of air traffic, etc.

Though communication is desirable during a show program to time the acts and to schedule events in correct sequence, Howard states that he sees "no particular merit in requiring acrobatic acts to be in direct contact with the ground."

"Let's keep professional air shows," he

EFFICIENT REPAIR STATION of Gulf Coast Airmotive, operated by C. H. Wilson on the Mobile, Ala., Municipal Airport, is shown in the above photos. Max Balfour, who runs Spartan Aircraft Co. and Spartan School of Aeronautics at Tulsa, Okla., says he considers Gulf Coast Airmotive to have about the neatest, cleanest and most efficient repair station he's seen—and Balfour gets around a lot. Tools are in place, the floor is clean, and that's how it should be. The operator is the oldest government-approved repair station on the Gulf Coast, which seems to be evidence that it pays to run a clean shop.

suggests, "Form a board of specialists to advise and assist CAA and penalize violators severely, but, go on with the show."

For some time there has been a strong move in the Washington office of the Civil Aeronautics Administration to discourage "thrill" air show flying.

CAA's The Air Fair booklet deplores exhibition flying and advocates instead static displays and flying events which adhere to the everyday civil air regulations. Over 1,000 copies of the 20c publication were sold in 1950 and another 2,000 have been ordered and placed on sale.

The popularity of air shows is attested by the fact that in 1950 some 449 waivers were issued for air meets, shows and other exhibitions. This year, as of Sept. 26, the CAA has issued 205 waivers.

CAA Airworthiness Directives

Luscombe Model 8C aircraft are approved with a new 11.5-gallon wing fuel tank installation feeding directly to the engine, not through the fuselage tank. Must be placarded "For take-off and landing, use 11.5-gallon wing tank only." See Luscombe Service Letter, dated Aug. 4, 1947. CAA AD Note 51-17 revision.

Franklin 6A4-165-B3 engines serially numbered 33046 and below inspection procedures for crankcase cracks and described. (1) Crankcases free of cracks should be inspected each 250 hours thereafter. (2) Crankcases found with surface indications, hairline cracks, small wall cracks, or cracks starting at main bearing stud hole on opposite side from main bearing support, may be operated further at the option of the owner but should be inspected thereafter at 50-hour intervals. CAA AD Note 51-17 revision, further adds that crankcases fractured or cracked entering main bearing supports indicate a complete break soon and should be replaced with reinforced assembly P/N 18925 after which no further inspections are required.

Cessna Model T-50 aircraft must be inspected for fatigue failure of rudder torque tubes in the lower rib and pylong area at each periodic inspection, by opening a section of fabric to permit removal of a 10-inch section of the leading edge wood block then aft along the lower rib flange. Cracks up to ¾ inch may be stop-drilled or welded, if longer replace by splicing between No. 1 and 2 ribs according to manual 18 practice.

Bell model 47 helicopters must be inspected for occurrence of cracks in engine mounting frame members near shock mount housing. Magnetic Inspection required at 600 hours, replace if any cracks found. Each 25 hours thereafter inspect tubing and welds with 10 to 20 power magnifying glass after removing paint, replace if cracked. At 900 hours replace engine mount assembly. If 900 hours at present replace within next 50 hours and inspect weld area near shock mount housing daily with 10 to 20 power glass.

The Washington View

By Vera Foster

TWO well-qualified "objectors" rose to combat the Senate's new G.I. Training Bill, S. 1940, when hearings were held a few weeks ago. The first of these, Congressman **Olin E. Teague,** objected to S. 1940 on the grounds that the House Select Committee of which he is the chairman is preparing a draft of an entirely new bill suggesting fundamental changes in the present program. Congressman Teague said that it would be "a hopeless task to amend and patch the present act" as proposed in S. 1940.

Second protest was placed by **Charley Parker,** of National Aviation Trades Association, who pointed out that, in view of the present pilot shortage and need of both military and civil aviation for trained personnel, classification of supposedly avocational flight training along with bartending and dancing courses is nothing less than "audacious." Parker recommended that the Senate consider instead the program soon to be proposed by the Teague committee.

•

Synthetic flight training has apparently gained official recognition. CAB has published a proposed regulation to allow approved flight schools to give "additional specialized instruction acceptable to the Administrator" in lieu of five of the required hours of flying time required for a private certificate.

•

Well, it looks as if the military has won its "discussion" over the Minneapolis, Minn. ADIZ area. Civil airspace users were apparently convinced of the military need for the Minneapolis ADIZ's deep penetration into a populous area.

•

A hurricane evacuation plan for Florida aircraft owners and operators is available from the Aviation Div., Box 930, Tallahassee, Fla. This evacuation program can help personal planes weather the fall hurricane season.

•

Not that we recommend that operators go around setting forest fires, but should a nearby area be burned over, state and federal forest services may be in the market with contracts for reseeding and other reclamation projects.

Forest fires this year have struck western states particularly hard. Over 15,000 acres were burned in the Gila National Forest Wilderness Area alone. Replacement of such watershed coverage is an important conservation item.

•

The "wild flying" commonly associated with crop-dusting pilots has been considerably calmed by Larry Conner, manager of the Natrona County Airport in Casper, Wyoming. During the current grass-hopper control season Conner meets each pilot with a copy of the field rules, a letter requesting their cooperation and a list of the airport's services. Sales and safety combined, always a good idea.

•

Remember some time ago in this column a mention of experiments in California with highly diluted 2,4-D which had resulted in increasing the size of citrus fruit? Over on the other side of the world a stimulant has been used to boost latex production from rubber trees as much as 20%. This stimulant, and doesn't this sound familiar, is said to be a combination of plant hormones in an oil base!

Aerial applicators may one day be tampering with the sex life of citrus, as well as killing weeds and controlling harmful insects.

•

Though Bill Odom's career has closed, honors are still being awarded. At the last meeting of the Federation Aeronautique Internationale in Brussels, Odom was posthumously awarded the Louis Bleriot Medal for his amazing 7977.92 Km. lightplane distance record.

Allison Turbo-Prop Engines Power 3 New Cargo Planes—

★ **The Lockheed XC-130**

★ **The Douglas R6D**

★ **The Lockheed R7O**

While testing continues with the first U.S. Turbine Transport—the Allison Turbo-Liner, built by Convair—military contracts have been awarded for the installation of Allison Turbo-Prop engines in three additional types of transport aircraft.

★ The Lockheed XC-130—a U.S.A.F. four-engine medium cargo plane—is *the first military transport ever designed originally around Turbo-Prop power.* It won U.S.A.F. design competition over five other makes and the selection of Allison engines represents another *first* for Allison in the development of turbine transports in this country.

★ The new Navy-sponsored R6D is a modified configuration of the world-famous Douglas DC6A Liftmaster.

★ The Navy R7O is the new turbine version of the Lockheed Super Constellation.

Allison Turbo-Prop engines were selected for all three aircraft because they develop more power with less than half the weight of present engines in this power class.

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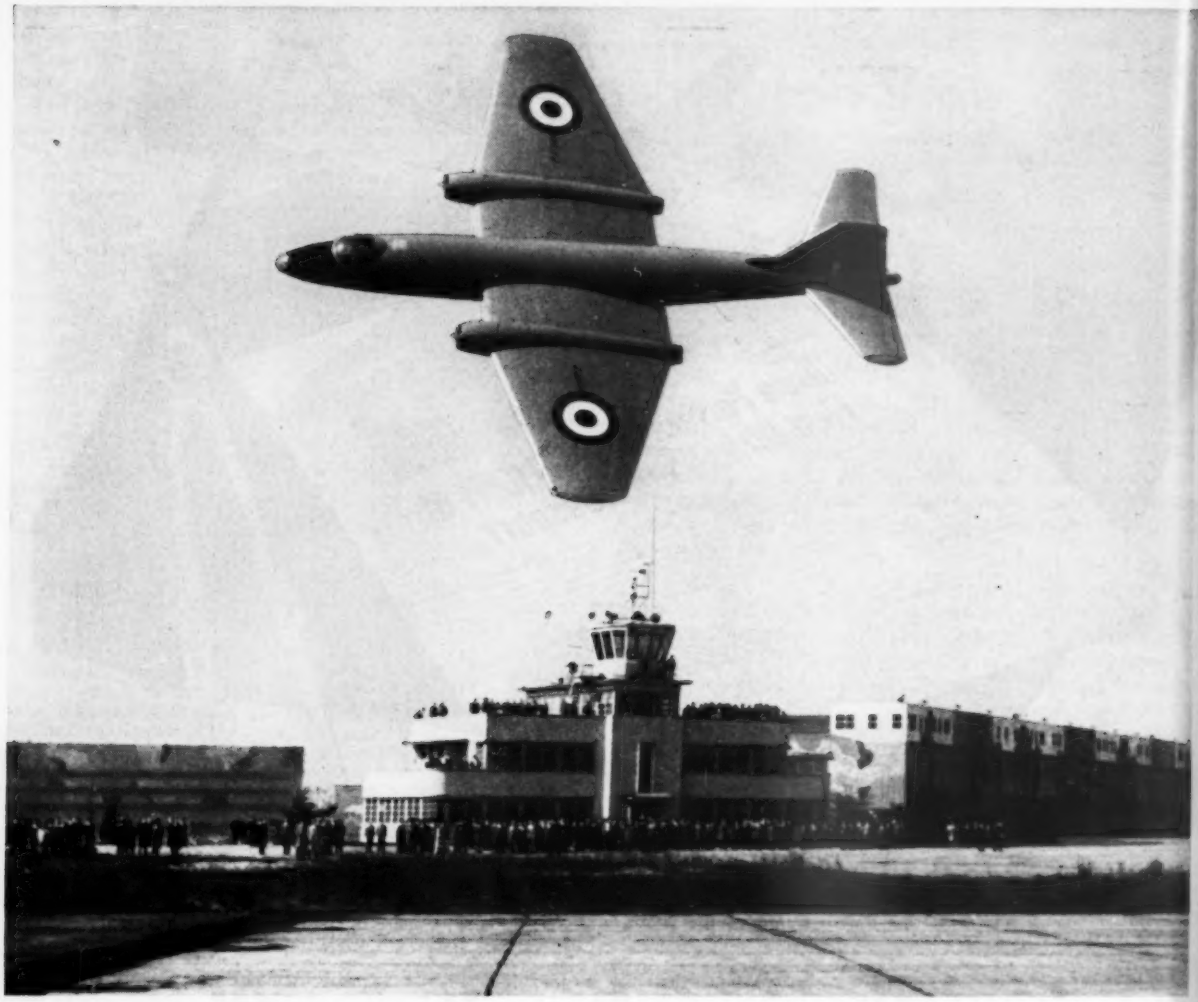

Above, the Canberra demonstrates its amazing all-level maneuverability on arrival at the Martin airport.

Below, the record-setting crew of the Canberra, R. H. T. Rylands, radio operator, Wing Commander Roland P. Beamont, pilot, D. A. Watson, navigator.

Wings to Shrink the World mean insomnia for the enemy. The tireless speed that flashed the twin-jet Canberra light bomber across the Atlantic in record-setting time of 4 hours and 19 minutes—the zooming loop and blurring roll that signaled its arrival at the Martin airport—these foretell the tactical effectiveness of the night intruder version of the Canberra being developed by Martin for the United States Air Force.

Combining this fighter-like speed and maneuverability of the basic design by the English Electric Co., Ltd., with the advanced armament, electronic and engineering of the Air Force-Martin team, the B-57A reflects the growing potency of our tactical air power—assuring that enemy troops will neither rest nor move safely under cover of darkness.

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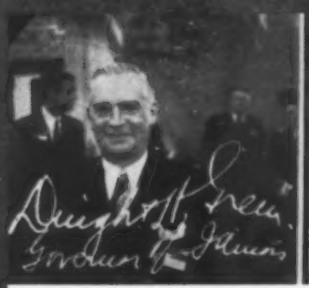
J. J. "Jim" Strobig
Associated Press
at Springfield, Ill.
November 19, 1947

Frank Bennett
Flying Magazine
at Springfield, Ill.
November 19, 1947



Dwight H. Green (QB)
State of Illinois
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November 19, 1947

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Reading Aviation, Inc.
at Springfield, Ill.
November 19, 1947

T. U. "Tom" Engelman
Grand Central Airport
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W. B. "Bill" Ziff
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Utah State Aeronautics Com.
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Indiana Aeronautics Com.
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Moreland, Amick & Black
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C. P. "Chuck" O'Connor (QB)
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E. M. "Ned" Benham
Sikorsky Aircraft
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Robert Ramspeck
Air Transport Association
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H. B. "Min" Miller (QB)
Cong Avia Policy Board
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IN FLIGHT

A PAGE FOR ALL PILOTS

Just Watch the Little Pointer

A TWIN Beech equipped with the newly designed Collins integrated flight system turned up recently at the Washington National Airport, giving CAA and CAB officials a chance to fly the new instrument equipment.

Captain Cameron T. Robertson, Pan American pilot on loan to the Collins Radio Company for three months, explained before take-off how the new instruments are used with ILS, but I found that the flight demonstration, in which the instruments do everything but give the pilot a two-dimensional picture of the airplane and its relation to the runway, was the most effective way to get the word on the new flight group.

Captain Robertson oriented the plane by use of one of the two instruments, the course indicator, which gives a picture of the plane's position. It also shows displacement with respect to a given omni-range or localizer course, compass heading and deviation, to-from information, and bearing information to or from an omni-range station.

Flying the plane on the final approach, I used only the Collins approach horizon, the other new instrument. With Captain Robertson controlling the throttles and keeping on the lookout for other airplanes, I flew the plane with my eyes glued to the approach horizon without looking out to see the runway at all. It was a novel experience, for with no bracketing whatsoever, the plane followed a smooth downward curve, dead onto the end of the runway.

This instrument is similar to an ordinary gyro horizon. But in addition to showing relation between the plane and the horizon, the little airplane-shaped indicator in the Collins instrument also gives information on the glide path. By matching a small pointer on the left side of the instrument's face with the left wing of the little airplane, I made sure that the plane was on the proper glide path. By looking at this small pointer, I could tell at once if I was too high or too low. Steering was simple. A horizontal needle moves to right and left of center. When it moved to the left, I steered left and the needle moved back to center again.

The needle actually anticipated steering moves, and by following its directions, even a pilot unfamiliar with the equipment (as I was) can steer smoothly, straight for the runway.

—DICK FULLER

Grounded But Not 'Down'

BACK in October, 1949, Jack Hoffman of Memphis, a Chicago & Southern Air Lines captain, was flying DC-3's between Memphis and Detroit. He had been with C & S for seven years, five of them as captain. Before that he had done aerial photography for the Department of Agriculture. A large and important part of his life had been devoted to flying and he was very much wrapped up in it.

One morning, he felt as if he were coming down with grippe. He took things easy for a couple of days. Then as he got weaker, he was taken to the hospital where his condition was diagnosed not as grippe but polio.

He was moved to the Memphis Isolation Hospital, where he had his first session with an iron lung. Then he was sent to Warm Springs, Ga., by the National Polio Foundation for treatment.

When Hoffman returned home in December, 1950, his legs were practically useless and he faced the grim probability that he was washed up as an aviator. But his outlook on life never did dovetail with what seemed to be the hard facts.

"No matter how bad off you are, you can always look around and see someone in worse shape," he said.

Now things are looking up for him. This month he went back to work for C & S as a Link trainer operator and supervisor of airmen's records. The Link work, of course, is right up his alley.

As for flying, Hoffman hasn't given up at all. The muscles in his legs are gaining strength every day and he believes that one day he'll be able to throw away his crutches and take his seat with his feet on the rudder pedals and his hand on the throttles, perhaps not as an airline pilot—he's 39 now—but in the cockpit of a plane that really flies.

Guinea Pig Cadets

FIFTEEN aviation cadets are being used as guinea pigs by the Air Force at Goodfellow AFB, San Angelo, Texas, to evaluate two new trainers, the Temco YT-35 Buckaroo and the Beech YT-34 Mentor. "Flight Time," Goodfellow base publication, reports that 30 students with no previous flying experience, all having uniform stanine ratings and academic backgrounds have been chosen for the aircraft-evaluation program.

Fifteen cadets, training in already evaluated North American T-6G's will be used as the control group. Nine students will fly YT-35's and six will fly the YT-34's.

Experiment is expected to determine average number of hours needed to solo each type of aircraft, and the general proficiency of students trained in the different airplanes. It will also be used to evaluate the planes in different phases of flying, and to help assess student's ability to make the transition to jet aircraft.

Jumping at 50,000 Feet

ONLY five cases have ever been fully reported in American medical records of flyers who abandoned their planes at 38,000 feet or higher. Four of the five delayed pulling the cord until they had dropped to atmosphere which would support life. One of them never did pull the rip-cord. He rode his unopened chute into the ground.

To find out what happens to a man when he shoots out of his cockpit into a gale of freezing air at 50,000 feet, a group of Air Force medical men have tried to reproduce the conditions a jet flyer would meet in a bailout at that altitude.

They tested 79 volunteers, including themselves, for three minutes at a time in winds of hurricane force, ranging between 115 and 125 miles an hour. Temperatures were dropped to minus 65 degrees Fahrenheit. Wearing varieties of cold-weather gear, the subjects encountered the blasts in positions a falling man might assume. Some were revolved on a rack to simulate tumbling. In some tests, they breathed air deficient in oxygen, as a pilot would if he had a leaking mask.

Doctors measured blood pressure, skin temperatures, heart beat, and respiration by means of instruments attached to the subjects' bodies. The subjects were pretty uncomfortable, but there were no injuries except for a few mild cases of frostbite. Not more than three or four degrees of internal body heat were lost by the volunteers in the course of their mock falls.

Doctors concluded that a flyer in a free fall has plenty of time to get down to warmer altitude without injury.

Hitching your wagon to a Star

... isn't so far-fetched nowadays. Jets are ramming into the stratosphere at unprecedented speeds and the ceiling is definitely unlimited. PAC's master pneumatic brain is the nerve center of a vital pressure schedule system which functions automatically. Research and development engineers at PAC are constantly at work to make equipment more efficient... lives safer.

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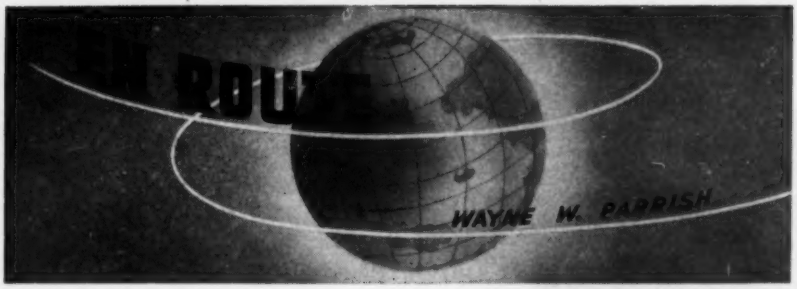

Buddhism. The more I get around the world the more impressed I am with the variety of religions. I have been in quite a few Moslem countries, but my first contact with Buddhism as the national religion was in **Thailand** (Siam) earlier this year.

The Buddhist monk is a colorful figure. His head is shaven and his dress, consisting of three main pieces, a skirt, a scarf and a voluminous robe, is bright yellow. Against the rather somber dress of the ordinary people, the monk stands out sharply. In **Bangkok** there are thousands of them.

The Buddhist religion had its origin in the doctrine taught in India, somewhere about the sixth century, before the Christian era. Briefly, it is a way of salvation, a technique of escape from the misery of life. One of the primary Buddhist conceptions is a belief in transmigration by which every life, human or animal, is only regarded as a phase in a circle of innumerable regenerations. Another conception is that every good or evil deed has a consequent result in the present or the future life.

✦ ✦ ✦

Believe in the Truth. The Christian religion is noteworthy for its sacraments, its rites and its formulae. But there is none of these in Buddhism. Laymen who have not been formally ordained are Buddist simply by virtue of the single fact that they accept the teaching of Buddha as the truth.

Technically, Buddhism is without a god, but actually the ordinary people consider Buddha as a God to whom they address their petitions. But Buddha is not a creator nor a savior. The believers in Buddhism worship by respecting images, relics and footprints of Buddha.

All of the foregoing is a prelude to explaining something about the fantastically beautiful Buddhist temples of which there are 309 in Bangkok alone. Since Bangkok was built less than 200 years ago, all of these are relatively new.

'. . . ACTING was by gestures.'

All are dedicated to the religion and teaching of Buddha but they are unlike any other places of worship I've ever seen.

✦ ✦ ✦

Rich and Beautiful. Usually they are in groups with a main temple and a collection of smaller temples each designed for a specific purpose. The towers of the main temples extend high in the air and form a backdrop for the city second to none in the world.

There are great treasurers in some of these temples. The Reclining Buddha, for example, is a reclining statue 160 feet long, covered with 770 pounds of gold leaf. The emerald Buddha is covered with priceless emeralds. In most of the temples and buildings there is an abundance of gold leaf, wood carving, inlays, precious metals and precious stones. And everything done with great taste and beauty.

Off With the Shoes. To go into a main temple, you must remove your shoes or cover them with cloth jackets. Occasionally, there will be people sitting on the floor inside, in front of a Buddha image, sometimes having tea, sometimes chatting with friends for hours, sometimes just resting. There are no services. Respect seems to be the chief order of the day.

Many of the smaller buildings are closed and are empty inside. One small chapel may contain a whisper of Buddha, hence there is nothing to be seen. Another may contain a twig associated with Buddha. The temples of Bangkok are worth many, many hours. Such color, such unusual architecture, such intricate designs and imagination. They're worth a trip around the world to see.

✦ ✦ ✦

Siamese Drama. In addition to the temples I enjoyed tremendously an evening at the national Thai theatre watching a classical Siamese dance drama called "Prasanta Decoying of Dove." The costumes were out of this world and the acting was by gestures. That is, if an actress was supposed to be riding a horse she carried a horse's head and gracefully trotted across the stage. The dancing was purely classical and well done.

Usually in classical Siamese drama men and women do not act together in the same scenes, but the tradition was broken somewhat in the play I saw. Of course I couldn't understand the words, but the descriptive program was in both Thai and English. Gold brocaded cloth was used generously in the costumes and the actresses (and some good looking gals they were, too) wore lots of ornaments such as bracelets, anklets, etc.

At one side of the theatre just below the stage was the orchestra, and at first the music was nothing but strident jumbles rather irritating to my ears. But I began to like it after a while. The instruments were a xylophone, a set of gongs which kept going pretty regularly, a flageolet, a kind of tom-tom, and a set of two or three drums. There must have been several xylophones made of bamboo pieces. The tunes, if they can be called that, are all allied to the action on the stage and I'm told there are walking tunes, marching tunes, love-making tunes, anger-tunes, etc., so even if you're outside the theatre you know what's going on inside.

The Siamese theatre is a real experience. It's a treat in leisurely gracefulness.

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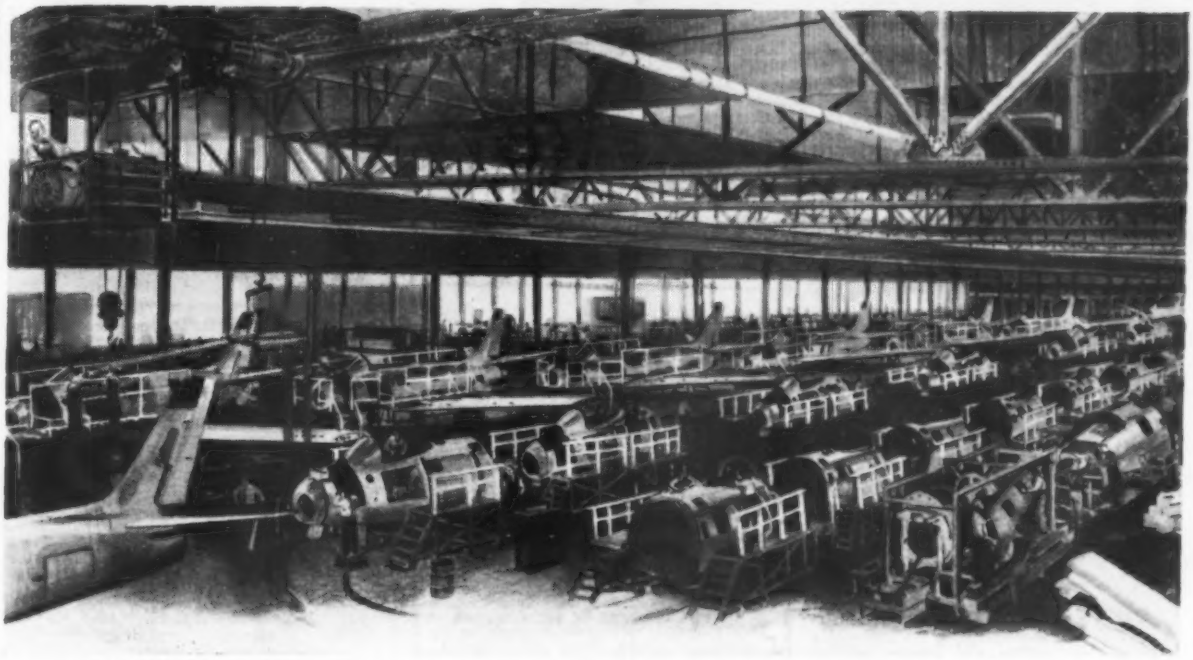
'SUCH UNUSUAL architecture, such . . . imagination.'



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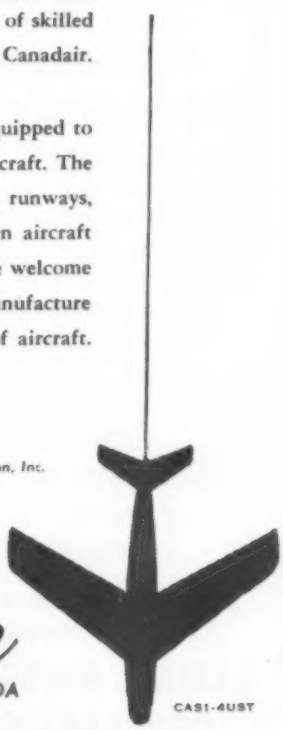

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(Continued from page 8)

the future of air transportation is only to add to the excessive optimism that so often characterizes our talking and thinking about this wonderful new transport media.

Let me illustrate my point about the dangers of a *net* figure, by using some purely hypothetical additional figures. If half of the passenger trains operated in the United States are relatively long-haul services and show a net operating income of one-half billion dollars and the other half—short-haul services—show a net operating deficit of one billion dollars, the result is as Gotch and Crawford show in their Table I, a half-billion dollar operating deficit. (Inadvertently, the authors dropped three zeros in the table so the deficit shows as one-half million in that table.) All this is possible. We know that some few railroads show a net operating income on all passenger services and perhaps all important railroads are operating one or more long-haul "name" trains at a profit. We know also that the local passenger train has been and is still today losing money very heavily. It should be clear that a conclusion based on a half-billion dollar net deficit figure for all railroads needs to be qualified in two ways: (a) the loss is understated, as in the hypothetical figures where the loss was one-billion for one kind of service—short-haul; and (b) the profit is obscured, as in the instance of the long-haul service, which did show a half-billion dollar profit. As the passenger local slowly vanishes from the scene, the railroads are free to concentrate on the long-haul, relatively profitable traffic. That, of course, is in the part of the passenger market of most interest to air transportation.

We can pursue the breakdown of the net figure further. The authors observe that passenger trains carry mail, baggage, express and milk—the "head-end" traffic in railroad terminology, and that roughly 30% of passenger-train revenues come from this traffic. But it should also be noted that a staff estimate of the ICC finds over 60% of the passenger-train net deficit in 1949 was attributable to this head-end traffic and not to passenger services.

Clearly, there is more in the rail passenger losses than meets the eye. Railroads, airlines, and indeed most businesses, produce a number of goods or services for a number of markets. Unfortunately, inadequacy of cost information and the difficult problems of cost allocation hamper us in our determination of which of these services show a profit, or what rate of profit.

Different rates of profit may, however, be enjoyed by a firm on different services, and these differences may continue indefinitely. The possibility of conducting rail passenger services at a "profit" (the word itself has different meanings of, course) cannot be ruled out.

DOLE A. ANDERSON
Assistant Professor of Transportation
New York University

Wings of Yesterday

25 Years Ago

Northwest Airways, Inc., Detroit, Mich., was to take over the operation of the Chicago-Twin Cities air mail route from Charles Dickinson on October 1, 1926. Dickinson had given 45 days notice, as required by law, of his desire to discontinue service on the line.

•

The Department of War announced that an Advisory Air coordination Committee was to be created, consisting of the assistant secretaries for aviation in the Departments of Commerce, War and Navy which was to recommend general policies relating to the air activities of the government.

10 Years Ago

(In American Aviation)

About 300 Curtiss cargo transports—later to become known as C-46's—were being built for the U. S. Army following acceptance and exhaustive flight tests. Craft were to be manufactured at C-W's three plants at Buffalo and St. Louis.

•

Approval for production of 228 transport aircraft (150 DC-3's, 20 DC-4's and 52 Lockheed Lodestars) was granted by the Supply Priorities and Allocations Board. The move was expected to satisfy airline equipment needs for 1942 and the first half of 1943. Planes, however, were to be standardized and modified to some extent to render them more readily convertible to Army or Navy use in the event of an emergency.

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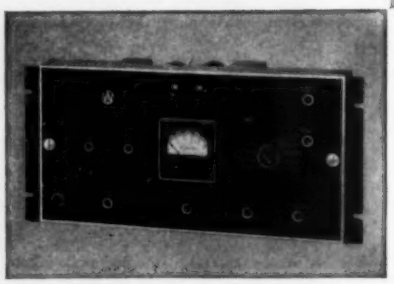

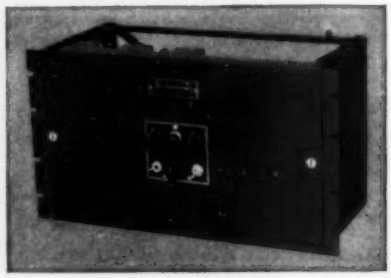

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Write Today **for complete information and specifications on the Wilcox Type 408A Transmitter and the Type 305A Receiver.**

NEWSLETTER (*Continued from opposite page 3*)

AIRLINES

Colonial Airlines expects to make a successful merger deal soon, according to its president, Alfons B. Landa. Answering a Colonial stockholder who charged the company was being placed at a "great disadvantage" in merger negotiations because of minor emphasis on traffic operations, Landa promised an early deal which would not involve "extinguishment" of Colonial. Answering other charges, Landa repeated that his only loyalty is to Colonial and that management contemplates court action in cases where the company has claims against "anybody, including Janas," a reference to former president Sigmund Janas, Sr. Reports have Landa favoring a Colonial-Northeast merger which would be tied in with the pending Northeast-Delta hook-up.

Seven major airlines signed a new 10-year Willow Run Airport lease agreement but have option to withdraw after three years, subject to giving one year's notice. This means they will be able to move to Detroit-Wayne Major Airport after Sept. 30, 1955. Willow Run agreement, entered into with University of Michigan, owner of the field, becomes effective Sept. 30, 1952.

Order curtailing high octane gasoline allotment to commercial aviation is reported to be a decided possibility. Such an order would force airlines to use gas with higher lead content, which would increase maintenance-operations costs. Extent of military requirements will determine the matter.

Major aims of Air Line Pilots Association, according to Clarence Sayen, new union president, will be (1) speeding up tempo of contract negotiations with airlines, (2) serving as "strong and independent" spokesman for the pilots in all major projects relating to their profession, (3) making maintenance of good labor relations a day-by-day program, (4) giving members the major voice in ALPA policy, and (5) taking part in contract administration instead of confining its efforts, as in the past, to contract negotiation.

Alvin P. Adams has been elected a vice president of Pan American World Airways, assuming duties and Adm. John Towers who will shortly reach retirement age. Adams formerly headed the aviation management consulting firm of Alvin P. Adams & Associates and was one-time president of Western Air Express.

In further realignment of operations and passenger service functions, United Air Lines has named O. T. Larsen as assistant vice president-transportation services and O. C. Enge general manager of pasenger service. S. V. Hall continues as general manager of ground services. All three will serve under D. F. Magarrell, newly-elected v. p.-transportation services. W. E. Larned, who has been UAL's assistant general manager-flight operations, has been named Los Angeles flight manager.

Civil suit for $1,510,000 damages has been brought against R. W. Marshall, board chairman of Alaska Airlines, by Arthur W. Stephenson, former employe of the airline, who alleges that Marshall "injured his good name, reputation and credit . . ." Stephenson is also named in a suit filed against Marshall and Alaska by Harry A. Bowman, former employe and minority stockholder, as allegedly having been wrongfully discharged and due $3,600 back wages. Bowman asks temporary restraining order enjoining Marshall from exercising his office pending determination of the allegation that Marshall has failed and refused to account for the proceedings of the airline.

Alaska Airlines is operating thrice-weekly C-46 cargo and mail service between Portland/Seattle and Fairbanks/Anchorage after discontinuing daily DC-4 service between the points and voluntarily grounding its three Douglas planes. The grounding was reported due to leaky wing fuel tanks.

Aircoach Transport Association has re-elected Amos Heacock, head of Air Transport Associates, as president. Other officers: I. E. Hermann, Great Lakes Airlines, 1st v.p.; Robert Duff, Miami Airlines, 2nd v.p.; H. B. Robinson, Peninsular Air Transport, treasurer; E. J. Daly, World Airways, secretary.

Col. A. D. Tuttle, 71, retired medical director of United Air Lines, died Oct. 6 of a heart attack. He was UAL medical director from 1937 to his retirement last June.

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CIVIL AERONAUTICS BOARD

Eastern Air Lines moved into the east coast airline merger picture last week requesting CAB to expand the New England-Southern States Merger Investigation to consider linking Eastern with Colonial, Northeast and/or Capital. Eastern said it has had merger talks with managements of various carriers and believes "an Eastern merger or combination can and will be forthcoming." Carrier pointed to an Eastern-Colonial hook-up as being in the public interest.

CAB reopened the final mail rate dockets of seven domestic carriers, thereby placing the entire domestic industry, except the "Big Four," on an open mail rate basis. The seven, whose rates from Oct. 1, 1951, are now subject to change, are Braniff, Capital, Chicago and Southern, Continental, Delta, Inland and Western. The "Big Four" were recently placed on final "service" rates; remainder of the industry, aside from the seven above, is on temporary rates. CAB indicated the seven face possible rate cuts because of "improved economic conditions."

Sharp legal skirmishes over alleged "threats to the Board" marked first week of hearings in the complex New York-Balboa Through Service Proceeding which involves numerous interchange possibilities between the U. S. east coast and South America. EAL and Pan American officials contended that CAB cannot legally compel interchanges in the case. They urged approval of their voluntary proposal for one-plane service via Miami. But with compulsory interchange

issues in the case by CAB directive, opposing counsel charged EAL and Pan American with threatening the Board. Hearings figure to run for three weeks.

Post Office Department claim that Capital Airlines' mail pay for June, 1951, was a minus $94,000 was upheld by CAB last week. PO had billed Capital for the amount under a CAB-set sliding-scale rate formula in which mail rates decrease as passenger loads increase. PO claimed CAP's traffic was so good in June that instead of receiving mail pay, it actually owes $94,000. CAP blamed the freak result on CAB's failure to place a floor in its formula. CAB over-ruled CAP's arguments, but agreed to provide a floor in mail formulas in the future. Nine other carriers operate under formulas similar to Capital's.

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MILITARY

Flight pay for "desk pilots" squeaked through House-Senate conferees. House-urged compromise eliminates the 20-hour-a-month requirement made in Senate version and allowed flight pay for training, including that needed for proficiency of administrative personnel.

H. R. 4914, which authorizes $5,864,301,178 for military construction, has been signed. USAF gets about $3,500,000 and will use it for new overseas air bases, as well as for increasing present 232 air bases to 309. Runways will be widened to 200 feet and lengthened to 8,000 feet or more. Bill requires the military to reach agreement with House and Senate armed services committees before making any real estate transactions involving more than $25,000.

Beginning of an atomic-powered USAF can be expected by 1961, according to Gordon Dean, chairman of the Atomic Energy Commission, Convair and General Electric are already working on the airframe and power plant for an atomic plane.

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CONGRESS

Prototype testing funds have been eliminated from the CAA budget allocation by Senate-House conferees. Senate had approved $597,000 for testing of propjet and pure jet transports.

Bill giving CAB power to impose civil penalties for economic violations (S. 2213) has been introduced and referred to the Senate Interstate and Foreign Commerce Committee.

House Ways and Means Committee has approved exemption of ground equipment for foreign flag aircraft from duty and taxes on imports provided U. S. planes get similar privileges in other countries.

Proposal to give Comptoller General right to examine records of defense and GSA contractors receiving negotiated contracts was blocked by three House members. But the House rules committee approved bringing the bill to the floor. The three Congressmen opposed bring the bill up for consideration under unanimous consent.

FINANCIAL

Consolidated Vultee Aircraft Corp. netted $5,922,941, or $2.50 a share for the first nine months of 1951, as against a net of $5,536,311, or $2.38 a share for the same period of 1950. Present backlog is $750,000,000.

Northwest Airlines has paid $1,000,000 on its 4% bank loan, reducing its long term indebtedness to $14,140,363.

Mid-Continent Airlines netted $130,293, or 31c a share, for the first eight months of 1951. In August MCA netted $30,428.

Slick Airways is offering investors 55,683 shares of common stock at $11 a share. The sale will bring outstanding stock to 275,152 shares. Money will be used for new equipment, including six DC-6A all-cargo planes.

The Flying Tiger Line has been authorized to sell 500,000 shares of 5% preferred stock at $10 par and 500,000 shares of $1 par common but plans only to issue 99,000 preferred shares as a dividend on 600,000 shares of common.

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LABOR

Both mediation talks and walkouts went on at three major strikes affecting the aircraft industry last week. Douglas and UAW-CIO negotiators continued Washington conferences after a week under the supervision of Mediation Chief Cyrus Ching in an attempt at settlement of the Long Beach strike. UAW and Wright Aeronautical Corp. seemed unable to get together on the strike at Wood-Ridge and Garfield, N. J. And state mediators took over talks between IAM-AFL and Pratt & Whitney officials over the work stoppage at Southington, Conn.

Air Line Stewards and Stewardesses Association has reached agreement with American Airlines on a new contract calling for an annual hike and higher cost of living allowances as well as a jump in the base scale. Total increase is $20.40 a month retroactive to Aug. 1.

Engineers and Architects Association refused a Lockheed-offered boost of up to 9% for the third time but refused a strike authorization. Union wants time and a half for salaried workers; Lockheed is offering time and a third.

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AROUND THE WORLD

New Indonesian carrier is Pioneer Airlines Co., made up of 51% Indonesian and 49% American capital. If the Indonesian government can renegotiate the contract giving Dutch-sponsored Garuda Indonesian Airways exclusive common carrier rights there, Pioneer will start carrier operations. Meanwhile it will be a private airline carrying property and personnel of the investors.

Argentina's new Minister of Aviation is Brig. Juan San Martin, replacing Brig. Cesar Ojeda, who resigned after serving since March, 1949.

RESEARCH
DEVELOPMENT

brings even the stars within reach . . .

Tonight, if the weather is clear, a man may chart the course of a star 6,000,000,000,000,000,000,000 miles from the earth, through the giant telescope at Mt. Palomar . . . a far cry from the crude 35-power glass through which Galileo first studied the heavens, centuries ago. In much the same way, important progress in every field of human endeavor, has always depended upon *research-development.* And through *research-development,* Eclipse-Pioneer has consistently kept pace with the brief, meteoric history of aviation . . . has frequently actually anticipated the needs of the industry. Thus, many of the instruments and accessories now under development at Eclipse-Pioneer are planned for use on aircraft whose performance will far exceed that of even the latest of today's planes. Continuing this policy, Eclipse-Pioneer is also at work on the *research-development* of components for guided missiles. All of this is important to you . . . for when you specify Eclipse-Pioneer instruments and accessories for your planes, you can be certain that they are the first word in quality and the last word in design.

ECLIPSE-PIONEER DIVISION OF

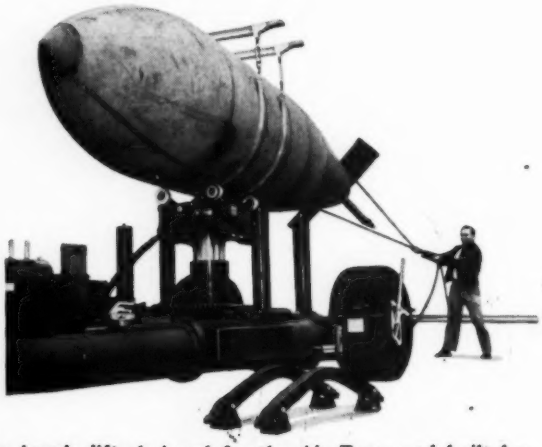
TETERBORO, NEW JERSEY

Export Sales: Bendix International Division, 72 Fifth Avenue, New York 11, N. Y

Bendix
AVIATION CORPORATION

Flying an early Wright pusher plane, Lt. M. S. Crissy and Phillip O. Parmalee took off at San Francisco with the first explosive ever to be dropped from a U. S. airplane.

U. S. Army First Bomb Drop . . . January 1911



Hydraulic bomb lift, designed for the Air Force and built by Boeing, rests on a wheeled carriage which can be used to transport the bomb to the ramp and load it into the bay of the bomber. One man, operating the lift, can raise a 25-ton bomb 12½ feet, roll it 360° in either direction, shift it 4" either side of center and 10" fore or aft, and tilt it 6° up or down.

THE PICTURES tell the story of the development of the bomb, as a weapon of war, from the small hand-grenade stage (1911) to a giant explosive so large, so heavy, that it requires the use of a hydraulic lift to load it into the bay of the plane.

In the intervening years, our entire aviation industry has progressed with astonishing rapidity, and the makers of fuels and lubricants have kept pace. Phillips Petroleum Company, pioneer in the field of special aviation gasolines and lubricants, has long been one of the country's largest suppliers of aviation fuels for commercial and military use. And now Phillips is ready with new fuels for turbo-props and jets in addition to its tremendous capacity for producing 115/145 grade aviation gasoline. The Aviation Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

PHILLIPS 66

AVIATION PRODUCTS

American Aviation

NEWSLETTER

Entered as Second Class Matter October 22, 1951 Vol. 15 No. 21

RECEIVED 22 OCT

DPA allotments to the NPA Aircraft Division are far lower than the Division had requested for the first quarter of 1952. Allocations for civil transports, light planes and military and civilian plane parts total 12,400 tons of steel, 1,708,000 lbs. of copper and 6,000,000 lbs. of aluminum.

This compares with a request of 14,759 tons of steel, 2,148,000 lbs. of copper and 9,869,000 lbs. of aluminum. Cuts were made by DPA's Program Adjustment Committee on the basis of planned reductions of military plane output.

Committee felt that fewer military planes would require fewer military plane parts (landing gear, heaters, pumps, fuel metering systems, etc.), which are allotted by the NPA division. Theoretically, therefore, reduction of controlled materials to the Aircraft Division should leave light planes and commercial transports alone.

But the Division is obligated to fill all allotments for military parts first. This can't be done with the present quantities which it will receive. If all civil allotments are filled, military will receive only 32% of what it needs for parts. If bulk of present allotments go to the military, lightplane builders will suffer a virtual "death sentence" and commercial transports will be delayed.

To try to resolve the problem, the Division is now trying to convince the military to relax its present rule so that the cuts made by DPA will apply equally to both military and civilian products.

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Responsibility for procurement and production, which was vested in Roswell L. Gilpatric when he was Assistant Secretary of the Air Force, will remain part of his job despite his jump to Under Secretary. But if the new Assistant Secretary (not yet named) turns out to be experienced in those fields, he will probably take over that part of Gilpatric's job.

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USAF's construction program will just be started by the $3.2 billion voted by Congress. Another $1.1 billion will be requested before fiscal 1952 ends and that money will only provide enough for the 95-wing program. An even larger request will probably be forthcoming in fiscal 1953 to take care of the buildup to 140 wings.

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Prototype costs are still skyrocketing. Wartime XP-38 cost $25 a lb. while XF-86 ran $230 a lb. First XB-29 amounted to $60 per lb. while the XB-52's projected cost is $250 a lb. and the next experimental bomber prototype will probably cost $400 a lb.

Cost of components isn't getting lower either. Norden's wartime bombsight weighed 125 lbs. and ran $5,000, while the K-1 optical and radar sight now in use weighs nearly a ton and costs $260,000 installed.

Consolidated Vultee has started work on a large jet commercial transport. Dr. William F. Ballhaus, chief of preliminary design at Fort Worth, is responsible for the project.

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New F-86 design now being worked out by North American Aviation's staff will have its wings swept back at 45 degrees as against 35 degrees on operational USAF planes. Designated NA-180, the plane calls for a new General Electric J-47 engine which reportedly will develop 9,500 lbs. of thrust, including afterburner.

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New type of mileage pay provision has been incorporated in the contract between Trans World Airlines and Air Line Pilots Association-AFL and many believe it may lead to a break in the deadlocked negotiations between ALPA and United Air Lines and American Airlines. Both lines have refused to sign any agreement containing mileage limitations or penalty provisions.

Under the TWA pact, first pilots will receive the usual base, gross weight and hourly pay plus 1½ cents for each mile flown. Inasmuch as all flying is paid for at the same rate, regardless of miles or hours flown, UAL and AA might decide to accept some similar agreement.

Other ALPA contracts, specifically those signed recently with Eastern and Capital, give pilots one cent a mile for the first 17,000 miles of flying each month, 2 cents for mileage between 17,000 and 22,000 and 3 cents for all over 22,000.

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UAW-CIO executive board met last week to decide whether to comply with a request by the Wage Stabilization Board that 20,000 strikers at Douglas-Long Beach and Wright Aeronautical Corp. return to their jobs while the WSB attempts to work out a settlement.

Continued failure by federal mediators to bring an end to the two disputes prompted President Truman to certify them to the board after Defense Mobilizer Charles E. Wilson reported they were threatening the U. S. defense effort.

Another UAW strike against 10 Borg-Warner Corp. plants was also turned over to the WSB for handling. Included among the B-W plants are Pesco and Ingersoll Products Divisions, both of which supply aircraft parts.

WSB policy has been to refuse to handle a wage dispute while workers are still out. UAW was expected to send Douglas and Wright employes back but keep B-W plants idle.

REFERENCE COPY

MANUFACTURERS

Several hundred million dollars in Navy orders for jet engines have been received by Westinghouse Electric Corp.'s Aviation Gas Turbine Division. The orders involve several engine types but only the J-40 was mentioned by name.

Rocket power plants for the Firestone version of the Douglas-developed Corporal E missile will be built by Ryan Aeronautical Co. Ryan originally developed the power plant for experimental models of the missile.

Willys-Overland Motors, Inc., has received a $10 million USAF facilities contract to expand its steel and aluminum forging capacity by about 60%. New equipment will include 20 steam drop hammers ranging up to 35,000 tons capacity. Present capacity at Toledo is about 2,500 tons a month.

General Motors Corp. is building two aircraft plants which will be convertible to civilian production after the emergency. A 1,000,000 square foot installation at Willow Spring, Ill., will assemble and test Wright J-65 engines when it is completed in 1953 while the product in another scheduled for construction in Arlington, Tex., as yet has not been chosen.

AMC Headquarters at Dayton has barred six manufacturers' representatives from conducting business at the base until it investigates to determine whether "small irregularities" were intentional.

Machine tool builders and rebuilders will inspect the remnants of stored USAF machine tools at Marietta, Ga., and Omaha beginning Oct. 22 now that contractors and subcontractors have had two opportunities to take the tools they can use. Equipment will be leased to tool builders for 1% of its original cost per month so that they can use it to make new tools. On Oct. 29 the armed services will screen the stockpiles for their own use and anything remaining at Marietta after that will be shipped to Omaha so that Lockheed can take over the space.

USAF plan to purchase Hughes Aircraft Co.'s new electronics plant at Tucson, Ariz., has been "vigorously" protested by Rep. Harold A. Patten (D., Ariz.) who asked the House Armed Services Committee to investigate negotiations for the plant. Any transaction involving $25,000 or more for property by the military must be approved by the committee under a new law.

New president of A. V. Roe Canada, Ltd., is Crawford Gordon, Jr., Canada's Coordinator of Defense Production, succeeding Sir Roy Dobson, who moves up to Avro's board chairmanship. Gordon will also serve as general manager.

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PLANES AND EQUIPMENT

Study on volumes and types of gasoline used by U. S. commercial airlines is now being made by CAA at the request of the Petroleum Administration for Defense. PAD will use it to determine how the carriers will be affected by any future order raising the lead content of aviation gasoline.

About 80% of all transport planes in scheduled operation around the world are U. S. built and 56% of the American craft were produced by Douglas Aircraft Co. Of 221 scheduled common carrier airlines, 217 use 3,830 planes. Douglas produced 2,161; Lockheed 293; Convair 223; de Havilland 211; and A. V. Roe 126.

New Bendix Aviation Corp. 380-horsepower self starter for the Wright J-65 engine needs only 3½ minutes to get the engine up to 2,000 rpm's. Eclipse-Pioneer engineers claim the 75-lb. starter can be made part of the plane, eliminating ground starters.

CAA type certificate will probably be granted to the McCulloch Motors MC-4 tandem helicopter by mid-November. The craft now has had 250-300 hours total time, with about 50 hours of flight tests.

Under a new Civil Air Regulation, an automatic indication of engine failure will be considered equal to an automatic feathering system as far as take-off of transports is concerned. CAB is accepting comments on the proposal until Nov. 12.

Oil re-refining process now in use by USAF's Air Materiel Command salvages 177 gallons out of every 1,000 gallons used in AF planes. Specifications for the re-refined oil are identical with those issued to crude oil refineries.

Hardman Tool & Engineering Co., West Los Angeles, has licensed Scandinavian Airlines System to make and sell two models of its aircraft passenger seats in Europe. One will be a deluxe lounge model and the other is designed for tourist service.

Convair's 340 prototype has now completed four flights. CAA certification tests, originally set for December, will probably start next month.

Hearings by CAB on gross operating weights for Curtiss-Wright C-46's have ended. The Council for C-46 Engineering is opposing a new Civil Air Regulation limiting operating weights of the plane.

Last of 200 North American F-51 fighters has been overhauled for the USAF by Grand Central Aircraft Co. Some are destined for the Royal Canadian Air Force.

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MILITARY

Roswell L. Gilpatric has been named Under Secretary of the Air Force, succeeding John A.

American Aviation

NEWSLETTER ABC **Vol. 15 No. 21**

WAYNE W. PARRISH, Editor and Publisher
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McCone, who resigned for "compelling personal reasons."

First transport types to be powered by compound engines are the military versions of the Lockheed Super Consellation. Navy's R70-1's and USAF's C-121C's will have four Wright R-3350 Turbo-Compounds developing 3,250 horsepower each.

New USAF runways are being built heavier and stronger to take care of future loads. A 10,000 foot runway now under construction at March AFB, Calif., has concrete almost three feet thick. Cost is $6,000,000 with materials alone running to $1,000,000.

Lt. Gen. Laurence S. Kuter has been nominated USAF Deputy Chief of Staff for Personnel and will be replaced as commanding general of the Military Air Transport Service by Maj. Gen. Joseph Smith, Director of Plans in the office of DCS-operations.

Nominated for fourth stars were Curtis E. LeMay, John K. Cannon and Benjamin W. Childlaw, commanding generals, respectively, of the Strategic Air Command, Tactical Air Command and Air Defense Command.

Lt. Gen. George E. Stratemeyer, former head of the Far East Air Forces, will retire from the Air Force next month after 36 years of service.

Joint Army-USAF program to improve ground support will involve interchange of personnel. Air Force has assigned 11 tactical pilots to divisions while Army will assign ground officers to fighter-bomber and tactical reconnaissance wings.

Air Coordinating Committee's Airport Use Panel has recommended that USAF's engine overhauls at Miami International Airport be handled by contract rather than by staffing airline overhaul facilities there with military personnel.

Laredo, Tex., Municipal Airport will be used as an advanced single-engine jet training school, if current lease negotiations are worked out. About $8,577,000 will be spent on construction. Air Training Command will operate the school.

Project "Moby Dick," involving release of plastic balloons at Holloman AFB, N. M., to study winds at 50,000-100,000 foot altitudes is now under way. Two balloons are now being released weekly and this will reach three a day. Balloons are 50-100 feet in diameter and 130 feet long.

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CIVIL

U. S. has the right to acquire jurisdiction over land in the states for civil as well as military airports. District of Columbia Federal judge ruled that the Federal law covering condemnation for military fields may also be applied to public civil airports.

CAA has reorganized its Office of Aviation Safety, effective next Feb. 3. Washington office will be made up of four divisions: Aircraft Engineering; Air Carrier Safety; General Safety; and Medical. An Aviation Safety Division will be established in the field.

Col. Joseph S. Marriott, head of CAA's Region Six, has been elected president of the Air Reserve Association.

CONGRESS

Defense Appropriation bill totalling $56,939,568,030 has now been signed by President Truman.

Congress has passed the State, Commerce and Justice Department Appropriation Bill, giving CAA $155,000,000 and the CAB $3,625,000 for fiscal 1952. The bill eliminated $597,500 for prototype testing, $7,140,000 in Federal Airport Act funds and provided $22,500,000 for establishing air navigation facilities.

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CIVIL AERONAUTICS BOARD

CAB proposed a possible cut-back in operating authority of Linea Aeropostal Venezolana because of alleged reluctance of the Venezuelan Government to grant equal operating rights to U. S. airlines. Action followed failure of this country to achieve equality for U. S. carriers through diplomatic channels. Specifically, it is aimed at Venezuela's failure to permit Pan American to operate non-stop between New York and Caracas, although the U. S. permits such operations by LAV. Also, CAB noted that LAV is subject to no frequency limitations, but that the foreign government imposes "an express limitation" on Chicago and Southern's Havana-Caracas service. Board directed LAV to show cause why its permit shouldn't be amended to establish "an equitable and proper balance of reciprocity."

W. R. Grace & Co. interests in Panagra, once strongly in favor of a Panagra-National interchange and opposed to a Pan American-Eastern operation, last week reversed its position and came out in favor of a Pan American-Panagra-Eastern hook-up for New York-Latin America service. At hearings in CAB's New York-Balboa Case, Andrew B. Shea, president of Panagra and a Grace nominee to Panagra's board, gave as reasons for the reversal (1) the possibilities of "protracted litigation" if PAA and EAL are unsuccessful in their interchange proposal and (2) "the amount of traffic that Eastern would feed to Panagra would be greater than if we were working with National." But Panagra, he said, would honor its contract with National if CAB approves such an arrangement.

Final mail rates proposed for Colonial Airlines by CAB call for an annual cut of about $400,000 for the future and a refund to the Government of $230,000 for the five year period ending Mar. 31, 1951. Critical of Colonial's past management, CAB proposed total mail pay for the back period of $5,120,319, approximately $2,600,000 less than that claimed by the line. Future rate, applicable from Apr. 1, 1951, will average about 24c per revenue plane mile, or about $872,000 a year, as compared to about $1,225,000 annually under old rates. Board's decision is tentative but will become effective in 10 days unless exceptions are filed.

Temporary all-cargo certificate of Airnews, Inc., issued in July, 1949, has been cancelled by CAB because of the line's failure to provide a required supplementary trucking service. Airnews claimed establishment of the trucking service would not be economically feasible and agreed to surrender its certificate following a Braniff

Airways complaint and a CAB show cause order aimed at revocation of the certificate. In cancelling the license, CAB indicated there is no basis for continuation if the combination air-truck service experiment is not provided.

Interchange agreement between Mid-Continent and Continental for one-plane service between St. Louis and Denver via Kansas City has been approved by CAB. Service will be on a twice-daily basis with Convair 240 aircraft.

North Atlantic Certificate Renewal Case was expanded by CAB last week to include an application of European-American Airlines, Inc., for a trans-Atlantic cargo certificate. Possibly an opening wedge for other would-be trans-Atlantic operators, particularly all-cargo lines, action enlarges case beyond the sole question of renewal and possible modification of trans-Atlantic certificates of Pan American and TWA which expire July 4, 1952. European-American is a non-operating airline corporation and originally asked CAB for the route in September, 1949.

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AIRLINES

Northwest Airlines has contracted to furnish and fly aircraft within Japan for recently-established Japanese airline, Nihon Koku Kabushiki Kaisha. Service is exepected to begin before end of October with one DC-4 and two Martin 2-0-2's, if approval of Supreme Command of the Allied Powers is forthcoming in time. NWA will fly and maintain planes and do other mechanical work; Japanese will take over such functions as sales, advertising, ticketing, etc. As Japanese participation expands, NWA is expected to train native pilots and mechanics. The airline, with Tokyo headquarters, will serve key cities including Sapporo, Aumori, Tokyo, Yokohama, Nagoya, Osaka, Hiroshima and Fukuoka, later adding points on the island of Shikoku. Original plan was to have seven international airlines participate in the Jap enterprise, but NWA said that "accord among the seven airlines was difficult to arrive at . . . so it was recently decided to have one outside airline, Northwest, take over."

Continental Air Lines has bought two Douglas DC-6B's from Douglas Aircraft Co. for delivery in May and June, 1953. Costing $3 million with spares, planes will be used on Continental-American interchange Houston-El Paso-west coast.

New Railroad and Airline Wage Board has established offices in the Home Owners Loan Corp. Bldg., 101 Indiana Ave., N. W., Washington. Nelson A. Bortz is chairman; other two members have not yet been appointed.

The Flying Tiger Line bought a Douglas C-54B from Intercontinental Airways and will use it in Korean airlift. Plane, equipped for passenger service, has R-2000-7 engines, and Tigers will install fuselage fuel tanks for Pacific operation.

First production Convair 340 is to go to United Air Lines, with delivery scheduled for early 1952, probably April. Plane made its first flight on Oct. 5.

Ralph W. Starkey has resigned as vice president and general manager of U. S. Airlines, certificated cargo carrier, and will announce his new connection shortly.

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LABOR

Walkout at Pratt & Whitney's Southington, Conn., plant is over but the issues which started the strike remain unsolved. About 1,900 AFL-International Association of Machinists workers quit work Sept. 19 but many straggled back each day and the remainder returned Oct. 11 after a vote. Mediators are still working to settle the dispute over an unlimited arbitration clause.

Federal District Court in Chicago named Manuel E. Cowen to protect the assets of Air Line Pilots Association-AFL and supervise funds for construction of new ALPA building. Appointment was made in connection with petition by ex-president Behncke to prevent present officers from disbursing funds. Petition was denied.

UAW-CIO and Breeze Corps. Inc. have signed a new two-year contract ending a six-week strike by 600 workers at Elizabeth, Orange and East Orange, N. J.

Regional Wage Stabilization Board in New York has refused a Bendix Aviation Corp. proposal to boost the pay of 1,558 unorganized white collar workers in the Eclipse-pioneer Division by 3.8%. The employes have received boosts of 12.7% since January, 1950. Bendix may decide to appeal the case to the National WSB in Washington.

AFL-Machinists at Pacific Airmotive Corp. plants at Burbank and Chino, Calif., have authorized a strike Nov. 1. They claim latest PAC proposal falls short of the terms the IAM recently negotiated with Lockheed.

Inspectors for Cessna Aircraft Co. at Hutchinson, Kans., have been ruled supervisory personnel by NLRB. IAM had sought to represent them for bargaining purposes.

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FINANCIAL

Consolidated Vultee Aircraft Corp. will pay a quarterly 35c dividend on its common stock Nov. 23 to stockholders of record Nov. 13.

British Overseas Airways Corp. netted $28,000 in August as against a loss of $1,058,400 for the same month of 1950. BOAC had a net of $341,600 in July, first in its history.

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AROUND THE WORLD

Air France's engine overhaul plant at Courbevoie, near Paris, has been certificated by U. S. Civil Aeronautics Administration. It is seventh overseas repair station certificated by CAA. Plant handles overhaul of P&W R-2000-13 engines powering Air France's DC-4's and Wright C18-BD's used on AF's Constellations.

de Havilland Comet jet transport flew London-Singapore in 24 hrs. 47 min., cutting 33 hrs. off normal flight time.